SCIENTEK
GLASSWARE WASHER / DRYER
MODEL SW-4600GWD

OPERATION AND MAINTENANCE MANUAL

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Section 1 SUMMARY OF FEATURES AND OPTIONS

Features and Options	Scientek SW-4600
Construction Configuration Load Size Washing Action	304L Stainless Steel Recessed into fascia wall at both ends 26”X 26“ X 27” H (660mm X 660mm X 686mm) Rotary Spray Arms
Door Type Number	Viewing window standard Automatic Vertical lift type Two (single option)
Washing Capacity Number of loading shelves Size of each shelf Standard basket size Load Throughput	8 baskets per cycle Four 23-1/4” X 25” (591 X 635) 12” X 20” X 4” (305 X 508X 102) 16 Std. baskets per hour
Cycle Time Pre-wash Detergent wash Rinse final rinse treatment Dryer	28 Minutes* One minutes (adjustable) Five minutes (adjustable) One minutes (adjustable) Three minutes (adjustable) Eight minutes approx. (adjustable)
Controller Unit Temperature Guarantee Recording Device	Micrologix 1500 micro processor 185F / 85C (adjustable) Optional Printer or PC connection standard
Display/Control Panel Door-open Cycle interrupt Temperature readout Wash cycle selection	LCD display / touch pad LCD display / touch pad LCD display / touch pad LCD display / touch pad LCD display / touch pad
Pump Capacity Pump pressure Circulatory piping	3 HP, 110 GPM 68’ head pressure 1 1/2” SCH 10 s/s pipe
Water Temperature Sump Heater	Steam (120-185) Electric (120-185) (optional)
Overall Machine Size	42" X 32" X 78" (1067 X 813 X 1981)
Electrics includes dryer Power Total Voltage (options)	60 Hz / 3 phase 13 kw 208V / 220-240V / 460-480V / 575V-600V
Warranty	2 Years on part / 1 year labour

*** See Appendix ‘D’ cycle 1 for full cycle description**

Section 2 GENERAL SYSTEM DESCRIPTION

2.1 MODEL COVERED

This manual covers the **SW-4600 SERIES** washer, which has been designed to provide a fully automatic programmed cycle for the processing of laboratory glassware and utensils. It is available in the following cabinet configurations.

Type I: Single door, freestanding unit
Type II:Single door, Recessed on wall installation
Type III:Two door, Pass Thru, free standing, recessed one end or recessed two ends

All Scientek washers utilize a Micro-processor Control Unit (MCU) which has been designed to provide ten pre-programmed timed cycles of washing, rinsing and drying.

The wash chamber can accommodate loads of up to 27" inches high, 26" wide and 26" in depth. The SW-4600 has a full size glass door. Every washer comes standard with a multi-level, multi-spray arm adjustable loading rack. The loading rack has a maximum of four levels to accommodate 4" deep baskets. Each loading shelf can be removed to accommodate larger loads. The washer comes equipped with blanking plates to divert water flow when any one of the four levels is not in use. Scientek offers a stainless steel transfer cart with a lower support shelf, as an option, to store and transport additional loading racks.

Washers are equipped with a 3.0 HP motor and stainless steel pump. The pump is pressure-rated for 110 GPM at 68 foot head pressure. Water treatment is delivered to the processing load through a 1-1/2 inch stainless steel circulatory piping system that provides a high impingement pressure on both the interior and exterior surfaces of the load. As each processed load is treated, the circulating water is filtered by two separate debris screens to remove suspended particles and to prevent paper or foreign matter reaching the pump impeller.

2.2 AVAILABLE OPTIONS

a. **WATER TEMPERATURE BOOSTER** raises the temperature of the supply water to 185°F (85°C). There are two methods available:

Steam heater: 120°F (49°C) raise to 185°F (85°C)
Electric heater: 120°F (49°C) raise to 185°F (85°C)

b. **DOOR CONFIGURATION GUILLOTINE DOOR TYPE** Specially designed door mechanism automatically opens and closes the door. For safety reasons the door mechanism will automatically stop closing and will open the door automatically when blocked by any obstruction.

TWO GUILLOTINE DOORS This configuration allows for "pass-through" operation of the washer: soiled side is separated from clean side. Only one door can be opened at one time and there is a door interlock system present to eliminate the possibility of cross-contamination by preventing both doors from being opened simultaneously.

c. **FINAL RINSE** will be with house supplied D.I. water and can be mixed, by factory pre-programming, with a milk lubrication agent.

d. **AUTOMATIC (LIQUID) DETERGENT DISPENSER SYSTEM** includes a detergent pump, which can be preprogrammed to issue the correct amount of cleaning chemical per load.

e. **AUTOMATIC (LIQUID) MILK LUBE SYSTEM** includes a milk-lube pump, which can be preprogrammed to issue the correct amount of lubricating chemical per load.

f. **AUTOMATIC (LIQUID) ENZYME DISPENSER SYSTEM** includes an enzyme pump, which can be preprogrammed to issue the correct amount of enzyme fluid at the start of wash cycle, pre-programmed to client's specifications.

g. **PANEL MOUNTED DATA REPORT STRIP PRINTER** shows events, times and temperatures.

2.3 STANDARD TREATMENT CYCLE

1. **PRE-WASH**
   On initial start-up, the wash chamber fills with fresh **WARM** water. Pre-wash solution tempers the instruments and glassware against possible thermal shock, and flushes loose soil from the load. Upon completion of pre-wash, the process solution is power drained to the sewer.

2. **DETERGENT WASH**
   Detergent wash receives fresh hot water to treat the soiled instruments and glassware load. Upon filling with water for the Detergent Wash, the detergent will be injected into the wash chamber by the pre-programmed pump. Upon completion of Detergent Wash, the water is power drained to sewer.

3. **FIRST RINSE**
   Rinse 1 receives fresh hot water to remove the bulk of the detergent from the instrument, glassware, piping, pump and wash chamber. Upon completion of Rinse 1, the water is power drained to the sewer.

4. **SECOND RINSE**
   Rinse 2 receives fresh hot water to remove any residual traces of detergent from the instrument load and washer. Upon completion of Rinse 2, the water is power drained to sewer. A temperature guarantee is programmed into this rinse to ensure the 182^{o}F (83^{o}C) disinfection temperature is achieved.

5. OPTIONAL **FINAL DI WATER RINSE**
   DI Rinse receives fresh D.I. water from the institutions supply to remove any residual traces from the instruments and glassware. Upon the completion of the DI Rinse the water is power drained to the sewer to prevent cross contamination.

6. **MILK LUBE INJECTION**
   Milk lube injection shall be pre-programmed into final rinse for instrumentation cycles if required.

7. **OPTIONAL ENZYME INJECTION**
   Enzyme injection shall be pre-programmed into pre-wash (hot or cold water option) for cycles as required.

Section 3 INSTALLATION

3.1 LOCATION

Install the washer as per installation details on the drawings provided for the unit. All local municipal by-laws should be followed.

3.2 UTILITIES REQUIRED

a. **ELECTRIC POWER**

To be specified by customer:

Electric power supply	Steam heated unit	Electric heated unit
208 Volts, 3 phase, 60Hz	60 Amp service	125 Amp service
480 Volts, 3 phase, 60Hz	30 Amp service	60 Amp service

b. **ELECTRIC POWER FOR CONTROLS**

A step-down transformer is provided with the washer, which operates at 115 VAC and a power supply is also provided for the 24 VDC controls.

c. **HOT WATER**

A tap water supply providing 12 gpm, at 30 to 60 psig is required. The water temperature should be 120^{o}F min. Approximately 44 gallons of water is used per cycle (depending on pre-programmed cycle). The supply connection is 1/2" NPT.

d. **DRAIN**

The floor drain line connected to the machine must be 2" NPT. This will permit a discharge of 8 - 10 gallons to the sewer in approximately 10 seconds.

e. **AIR**

An air supply at 80 psig is required to operate the pneumatic valves. Air consumption is about 1 cubic ft. per wash cycle. The connection to the air supply is 1/4" NPT.

f. **D.I. WATER**
A D.I. water supply providing 12 gpm at 30-60 psig is required. The supply connection is 1/2" NPT. Approximately 10 gallons of D.I. water is used per cycle.

g. **DRYING PACKAGE (Optional)**
Will be preprogrammed into each cycle by the factory. The drying time will be between 8 and 10 minutes per cycle

h. **STEAM**
A steam supply providing 393 lbs. per hour at 40-60 psig is required. The supply connection is 3/4" NPT. Steam consumption is 45 lbs per cycle. This includes consumption for heating DI water (optional).

i. **VENT**
Direct vent connection to facility duct system is not recommended. Collection hood(s) over doors and vent is recommended. Total 300-500 cfm extraction capacity should be provided.

j. **MACHINE TANK OVERFLOW**
The machine tank overflow is pre-plumbed into the piping of the washer.

k. **COLD WATER DRAIN COOL DOWN (Optional)**
For cold water pre-wash a 1/2" NPT cold water supply @ 12 GPM @ 30 - 60 psig is required. Approx. 10 gal. of cold water is consumed per cycle.

Note: Required pressures given for water, steam and air supply lines, range from minimum to maximum. If the services at the facility exceed these stated values a suitable pressure regulator must be installed before the tie-in connection is made.

3.3 ELECTRIC POWER CONNECTION

a. The supply power connections as specified are made directly to the L1, L2, L3 line terminals in the motor starter panel, for single circuit machines that are steam heated.

b. A separate fused disconnect switch should be provided in the power source for each circuit to the washer.

3.4 INSTALLATION CONSIDERATIONS

a. Shut-off valves should be installed in the air, water and steam supply lines. These should be readily accessible for emergency shutdowns and regular maintenance.

b. A steam-trap is recommended for installation in the steam supply line to ensure dry steam.

c. All installation details and instructions provided with the unit must be followed.

d. Installation should be performed by qualified personnel.

3.5 PRE-SERVICE OPERATION CHECKOUT

a. Open the following supply valves as applicable: **Water, Steam, Air, D.I. Water**.

b. Before turning on the main power to the washer, ensure that all the conditions under which the unit is placed is safe and secure.

c. Turn the POWER ON button on the front control panel of the washer to the ON position. This switch illuminates to indicate that the washer is active.

d. Operate the machine as directed in Section 3 through a complete cycle. Note that the pump shaft must rotate in the correct direction. In the event that the shaft rotation is not correct, disconnect the main power and reverse any two leads (L1, L2 or L3) in the pump motor starter panel. This effectively reverses the polarity. Incorrect rotation of the pump can result in pump damage.

e. The tank temperature is to be calibrated in the factory and should not require an adjustment.

f. On washers equipped with steam sump heater, perform the following adjustment.

- check and secure fittings
- tighten the sump coil support nuts after two or three hours of operation
- re-check the tightness after 24 hours.

Section 4 OPERATION

4.1 PRELIMINARY PROCEDURE

a. Ensure that all conditions of SECTION 3 have been met.

b. 1) Turn “Power On” selector to ON position. Green illumination should be lit.

2) On touch screen “Main Menu” press Operation Screen button.

3) On Operation Screen press “Door Open” button.

4) Use transfer cart to position header inside the washer cabinet, and locate header over quicklock connection.

5) On Operator Screen press “Close Door” button.

6) If correct cycle selection is not already indicated, press “Cycle List” navigation button.

7) You will now scroll down through ten cycles with cursor. At desired highlighted cycle press “Enter”

8) This will take you back to Operation Screen, where at the top will display new choice of cycle.

9) If correct selection now press “Start” button.

10) Washer will proceed through steps of cycle to display at finish, “Cycle Complete.Remove load.”

11) At the end of cycle the door will open automatically (For two door unit, clean side door will open).

12) Use transfer cart to unload header and remove.

13) Close clean side door if two door pass through model, if single door prepare next load for new cycle.

4.2 LOADING WASHER

a. Adjust the header shelving height according to load basket heights.

b. Fill the multi-level loading rack with the items to be processed.

c. Position the loaded rack within the wash cabinet to fully engage over the quick-lock connector.

Note: A transfer table will be used for transporting and loading headers into and out of the washer.

d. Close the door by pressing "Door Close" button on touch pad.

4.3 STARTING WASHER

After the power to the washer has been turned on, the following steps should be followed:

a. Push the START button on touch pad control. The wash chamber begins to fill with water. The water level in the sump is controlled by the liquid level switch.

b. After the initial fill, the Pre-wash indicator illuminates and the unit operates in the Pre-wash stage of selected cycle.

c. A three-step drain sequence follows: power drain, gravity drain, flush drain.

d. The wash chamber will fill with hot water. While filling the water, the detergent will be automatically injected into the wash chamber. Then the wash cycle begins to wash.

e. The unit continues through the wash cycle and the appropriate descriptions are shown on the display screen to match the various stages of the cycle. Display screen will read "Cycle Complete. Remove load" when wash cycle is complete.

f. All machines come with ten pre-programmed wash cycles. To customize wash cycles please refer to section 6.4 ‘Set-up Menu’.

4.4 SHUTTING-DOWN WASHER

a. Shut off the electric power to the washer.

b. Shut off all the supply lines connected to the washer: compressed air, steam, hot (and/or cold) water, de-ionized water.

c. When the washer is shut down for the day, it is recommended that the debris baskets and screens be removed from the washer, emptied and cleaned. Passing the baskets and screens under a stream of water is usually sufficient.

Section 5 OPERATION THEORY

5.1 POWER "ON" CONDITION

The washer is turned on by turning power switch to ON position. The switch illuminates, and the drain valve closes automatically.

5.2 WASH CYCLE START-UP OPERATION

Pressing the START button on the panel display signals the microprocessor to begin a programmed wash cycle. The microprocessor proceeds logically depending on the settings of the various program parameters for a selected cycle..

5.3 STOP BUTTON OPERATION

The operation of the washer is halted when the STOP button is depressed. This condition is indicated by a message on the operator interface and STOP light on the clean side control panel..

5.4 WATER LEVEL SWITCH OPERATION

The liquid level switch monitors the level of water in the sump. If the sump is not full, then the microprocessor signals the water-fill solenoid to open, allowing fresh water to enter the wash chamber. When a full condition is reached, the microprocessor proceeds to the next step of the programmed wash cycle.

Timed fill delay option is available to compensate for the volume of water in re-circulating piping and various headers.

5.5 WASH CHAMBER "FILL" OPERATION

Before the fill solenoid is opened, the microprocessor checks the signal from liquid level switch. If the signal is not present, then the microprocessor signals the fill solenoid to open. This allows fresh water to enter and fill the sump. Once the tank is full, the fill solenoid is closed.

5.6 DETERGENT MODE OPERATION

Washers are programmed to automatically inject detergent at the start of wash cycle, a pre-set value of 15 seconds for each cycle is standard and can be adjusted at user end.

Refer to the AVAILABLE OPTIONS section in this manual for complete listing and description of the various detergent dispensing systems available.

5.7 EXTENDED WASH TIMER OPERATION

Refer to section 6.4.1.1 ‘Cycle time settings’ to adjust wash and rinse times in each individual cycle, if you do not find the suitable times that are pre-set in the ten-cycle selection.

5.8 SUMP HEATER OPERATION

The sump heater can be specified to be electric or steam. The operation is controlled by the microprocessor, and the liquid level switch. Only when the signal from liquid level switch indicates full sump, the sump heater operate. This safety feature ensures that an over-heat dry condition never occurs.

5.9 DRAINAGE

The programmed wash cycles include a specially designed three-sequence drain system. After each washing and rinsing, water is drained in the following manner: power drain, gravity drain, and flush drain.
Power drain activates the pump motor, and forces the water to drain quickly. Gravity drain de-activates the pump motor, and allows the water to drain by gravity. Flush drain allows fresh water to enter the wash chamber as the drain valve remains open for several seconds. This step serves to flush out and rinse away any detergent residue at the bottom of the sump.

5.10 FINAL RINSE OPERATION

Final rinse can use D.I. water or tap water. The milk lube can be injected if required. This will be pre-programmed by the factory and can be altered to suit the facility.

5.11 POWER "OFF" CONDITION

To turn washer OFF, switch power switch to “OFF”, green light will go off. The drain valve automatically opens to allow the sump to completely drain by gravity.

5.12 "IDLE" STATE CONDITION

The "idle" state condition describes the washer when it is in-between loads. After a wash cycle has completed, and the next one has not yet begun, the only illumination on the display panel is “Ready to Wash”, select cycle and press start button.

5.13 MICROPROCESSOR CONTROL SYSTEM

The Microprocessor Control System is based on an Allen Bradley Micrologix 1500 series microprocessor controller.

The Allen Bradley microprocessor controller is an industrial grade controller that has proven its dependability, durability and performance primarily in heavy industrial environments such as pulp and paper mills, mining operations, and industrial plants for such functions as machine tools, material handling, assembly machines, robotics, and energy management.

The heart of the system is the “Smart Control” operator interface. This is an Allen Bradley PanelView 600 color touch screen interface, programmed with user display functions for complete information feedback during all ten cycles.

Unit will also provide diagnostic and service functions for testing PLC inputs and outputs.

Section 6 OPERATOR INTERFACE INSTRUCTION

6.1 INTRODUCTION TO PANELVIEW PV600

The PanelView 600 is a color touch screen operator interface. Is programmed to display the washer's status information and to provide for full control over the washer. It enables access and easy adjustment to washer's operating parameters.

6.2 MAIN MENU SCREEN

The MAIN MENU screen displays general information about the washer including system date and time.

The navigation button is provided to access the Operation Screen.

The key-lock switch must be on to allow access to the setup and service menus.

Alarm list can also be accessed from the Main Menu.

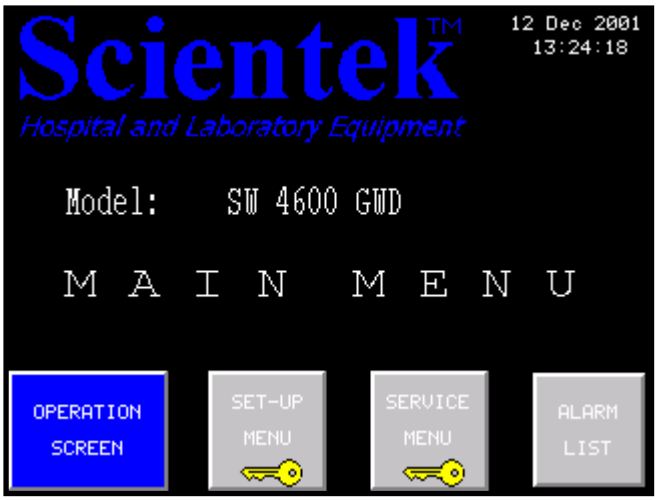


Figure 1 – MAIN MENU Screen

Access to Operation Screen

or

Access to Set-Up Menu (Disabled / Allowed)

or

Access to Service Menu (Disabled / Allowed)

Note that the sign denotes that the key switch needs to be in the ON position in order to access the respective feature !!

or

Access to Alarm List (no active alarms/some alarms present)

6.3 OPERATION SCREEN

The Operation Screen provides all information and controls needed to operate the washer.

On the bottom of the screen there are four control buttons: Start, Stop/Cycle Reset, Door Open/Close and Repeat Dry.

On the right side of the screen there are three navigation buttons to the Main Menu, Cycle Selection screen and the Alarm List screen.

Depending on the status of the washer operation, the control and navigation button may change the color and the title, as described below.

The top and central area of the screen provide the status information of the washer.

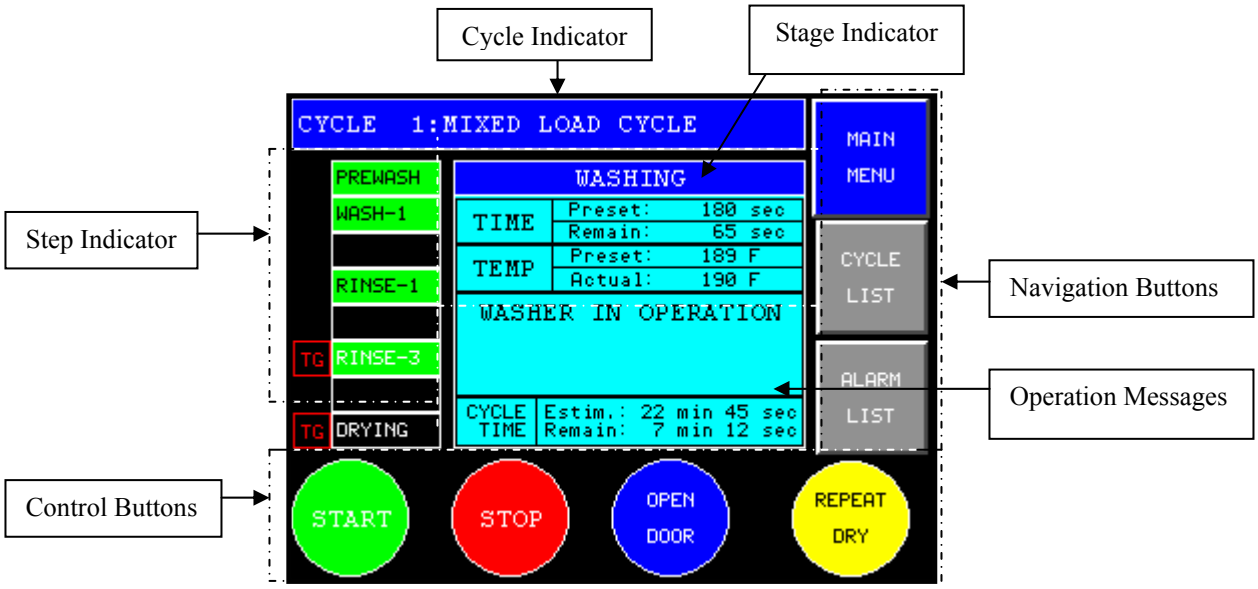


Figure 2 – OPERATION Screen

6.3.1 Control Buttons:

Start PB

The Start PB is used to start / restart the washer operation.

Stop / Cycle Reset PB

The Stop / Cycle Reset PB is used to interrupt any ongoing operation.

When the Stop button is pressed during the cycle operation it's label will change. By pressing it again and holding it pressed for approx. 3 sec it will reset the whole cycle.

Open / Close Door PB

The Open Door PB is used to open the soiled door. The door can be open while the washer is not in operation i.e. the cycle has not been started yet, or if it had been started it must be stopped first by either the Stop PB on the screen or the Emergency Stop PB. Once the door has moved from the closed position the label on the button will change to Close Door. At this moment pressing the button will cause the door to close.

Repeat Dry PB

This button can only be used at the end of the wash cycle to initiate repeat drying. Note: On the Auto Load / Unload model this button is replaced with the Auto/Manual PB.

Auto / Manual PB: (applicable to Auto Load / Unload model)

The operating modes are selected by pressing the Auto/Manual selection button. It can only be done while the washer is idle, i.e. no cycle has been started yet. Pressing the button repeatedly will scroll through the three available modes:

Full AUTO Operation:

The loading / unloading is automatic. The cycle selection is automatic based on the rack tabs. After initial start the washer automatically re-starts for every new cycle for as long as there are racks available on the load table. If there are no more racks detected on the load table when the washer completes the cycle and finishes unloading, the washer goes to the idle mode. It will need to be initiated again upon placing the racks on the load table.

Semi-Auto Operation (AUTO LOAD-MANUAL CYCLE SELECTION):

The washer will be loaded and unloaded automatically, but the cycle selection and the start of every cycle will be done manually by the operator. Upon completing the loading sequence the operator will be prompted to select the cycle and press the Start button. This is suitable for cycles 5-10 since they can not be selected automatically.

MANUAL Operation:

In this mode the washer is loaded and unloaded manually, cycle is selected manually and every cycle is started manually. This mode may be used in the case of the load/unload tables' devices malfunction.

6.3.2 Navigation Buttons

Cycle Select PB

This PB brings up the list of the available cycles, where the operator selects the one that suits the need. Blue button prompts that the selection is possible, while the gray button allows access to the list and review of the cycles, but changing the selection is not possible at that stage.

In the IDLE state operator is allowed to change the cycle selection.

The cycle list can be accessed and reviewed but the cycle selection can not be changed at that stage.

Main Menu Screen PB

This button will bring up the Main Menu Screen

Alarm List PB

This button brings up the alarm list. Gray button indicates that there are no active and un-acknowledged alarms, the blinking red button indicates that there are either active or un-acknowledged alarms.

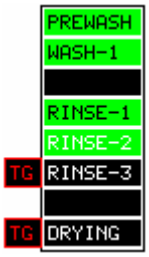
6.3.3 Status Indication:

Cycle Indicator: CYCLE 1:INSTRUMENT CYCLE
The Cycle Indicator shows the cycle that has been selected or currently running.

Step Indicator:
The Step indicator graphically presents progress of the cycle execution and the result for each step.

Before any cycle is started the indicator will show all steps in black/white.

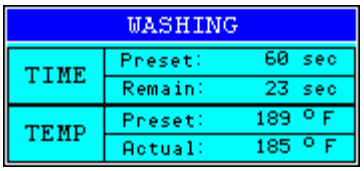
When the cycle has been started the steps that have the duration time set to zero will be blanked out, and the step that is being executed will flash green with white letters.



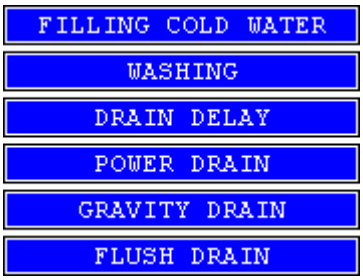
As the cycle execution progresses the completed steps' indication will become steady green with black letters.

The TG marks that the respective step has the temperature guarantee set. If the temperature guarantee set point has not been attained within the specified time the step indication will become flashing red. (TG RINSE-3)

Stage Indicator:



The Stage Indicator provides information regarding the step currently being executed. It shows what is the current action, the preset and remaining times for that action and the preset and current temperature readings for the step in progress.
The information on the stage indicator changes as the operation advances through the respective step.

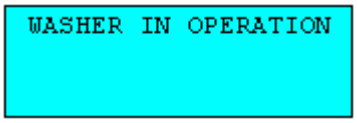


This is a sample sequence of information shown during the Prewash step.

Operation Messages:

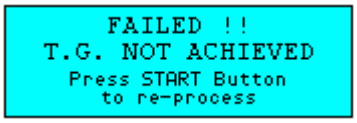
The message window is provided to display the information regarding the washer's operation, the operation conditions of the control devices and the actions required by the operator.

Washer is ready for operation, the operator is prompted to select a cycle and press the start button to initiate washing.



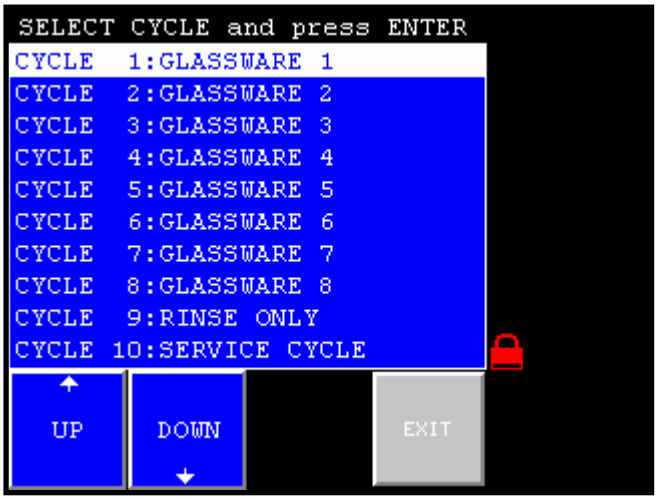
Washer is in operation

The emergency stop button is pressed.



The temperature guarantee had not been achieved. Operator should press the start button to re-process the load.

6.3.4 Cycle Selection



To select a cycle use ‘UP’ or ‘DOWN’ button to highlight the desired cycle and press the “ENTER” button. The screen will change back to the operation screen.

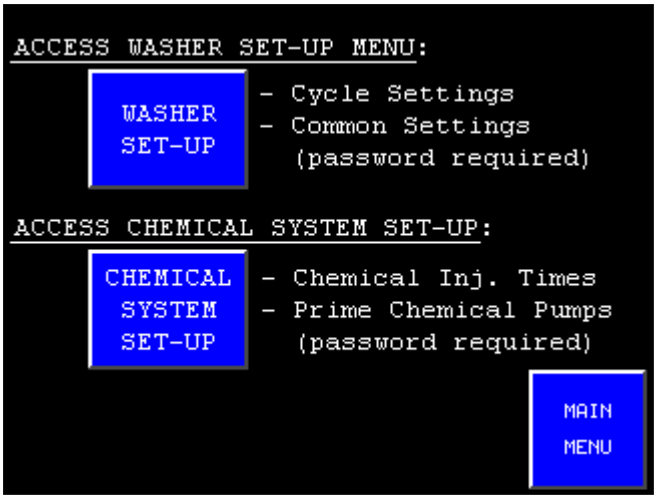
The “lock” icon indicates that the particular cycle has been locked out by supervisor and can not be selected for the operation (see section 7.4 for setting the ‘lock’).

If the cycle selection screen is accessed I the situation when the cycle selection is not allowed (washer in operation) the ENTER button will change to a gray EXIT button.

6.4 SET-UP MENU

The Set-up menu is accessed from the Main menu screen by pressing the SET-UP MENU button. The Service switch must be in the ON position to enable this button.

The following screen will be displayed:



Two options are given:

-

- access to all washer settings (cycle settings and common settings)
- valid password is required

- access to chemical injection times and priming the chemical pumps (set for the chemical contractor who needs no access to other washer settings)

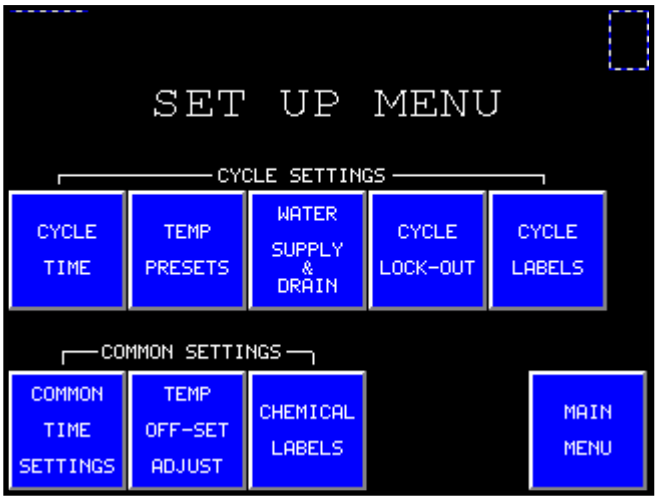
Password codes are required to access any selection from above. The list with password codes is supplied separately from this document.

Access to the WASHER SET-UP is allowed (with valid password) to the following users: Supervisor, Foreman and Service

Access to the CHEMICAL SET-UP SYTEM is primarily created for the chemical contractor to adjust the chemical injection times and prime the chemical pumps as needed. There is a separate user Chemical created with access code that will allow access only to these settings.

Note: All other users will also have access to the CHEMICAL SET-UP SYSTEM.

6.4.1 Washer Set-up Menu



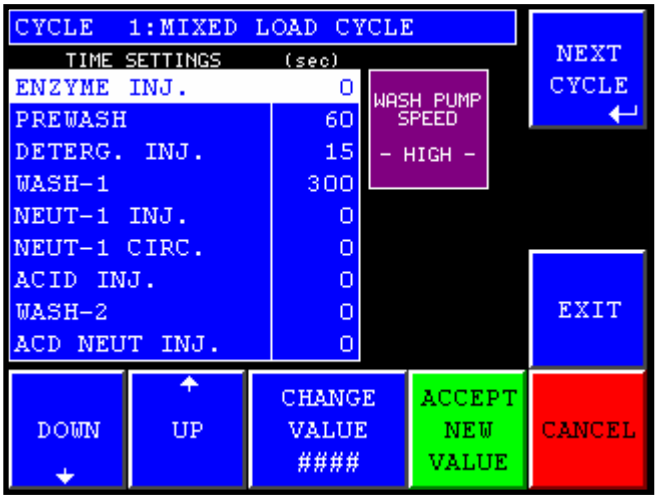
This screen is a menu screen leading to other set-up screens.

Access is provided to the Cycle settings, those relevant to a particular cycle, and to the Common settings which are relevant to some general features and the to the washer's operation in general, not specific to any cycle.

Access to the control system configuration settings (date / time, communication parameters, etc.) is provided on this screen as a hidden button. Press momentarily at the top right hand corner of the screen, a numeric keypad will pop up. Enter the password and the system configuration screen will be shown.

See the Panel View manufacturer's manual (chapter 3.) for explanation of the system menu. The system menu has some vital parameters. Only experienced personnel should use the menu.

6.4.1.1 Cycle Time Settings



Select a cycle for which you want to change time parameter(s), using the “NEXT CYCLE” button.

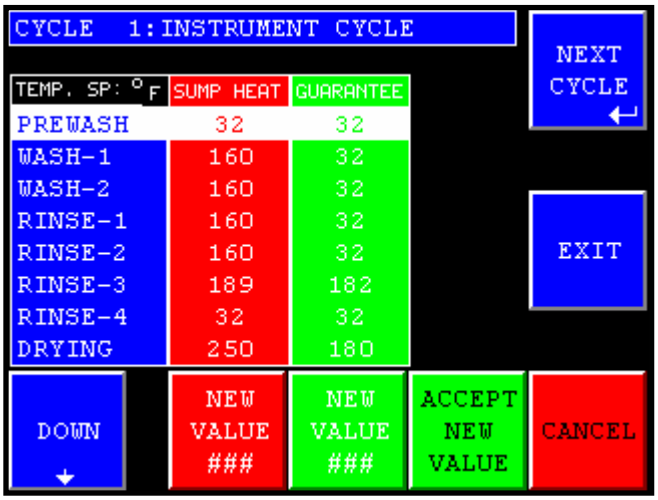
Use “UP” or ”DOWN” button to highlight the item you want to change and press the “CHANGE VALUE” button. This will bring a numeric keypad to the screen, where you can enter a new value for the item.

If the washer is equipped with the frequency speed controller for the wash pump, an option will be available to select either HIGH speed (full pump speed) or LOW speed (approx. 65% speed). Touch the button to toggle the selection.

After all parameter values for a particular cycle have been changed, press the “ACCEPT” button to accept the changes or “CANCEL” button to cancel the changes.

Select next cycle you want to modify or press “EXIT” button to go back to the Set-up menu screen.

6.4.1.2 Cycle Temperature Settings



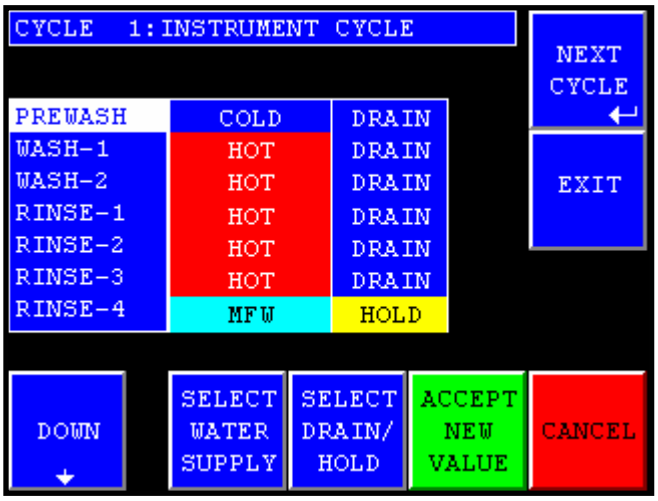
Select a cycle for which you want to change temperature parameter(s), using the “NEXT CYCLE” button.

Use “UP” or ”DOWN” button to highlight the item you want to change and press the “NEW VALUE” button either for the Sump heat or the Guarantee temperature. This will bring a numeric keypad to the screen, where you can enter a new value for the item.

After you have changed all desired parameters for a particular cycle, press “ACCEPT” button accepting the changes or “CANCEL” button canceling the changes.

Select next cycle you want to modify or press “EXIT” button to go back to the Set-up menu screen.

6.4.1.3 Cycle Water Supply / Drain Settings



Select a cycle for which you want to change the selection for either water supply or drain, using the “NEXT CYCLE” button.

Use ”DOWN” button to highlight the step you want to change the settings.

Use the “SELECT WATER SUPPLY” button to change the water supply for the selected step.

Available selections for the water supply are:

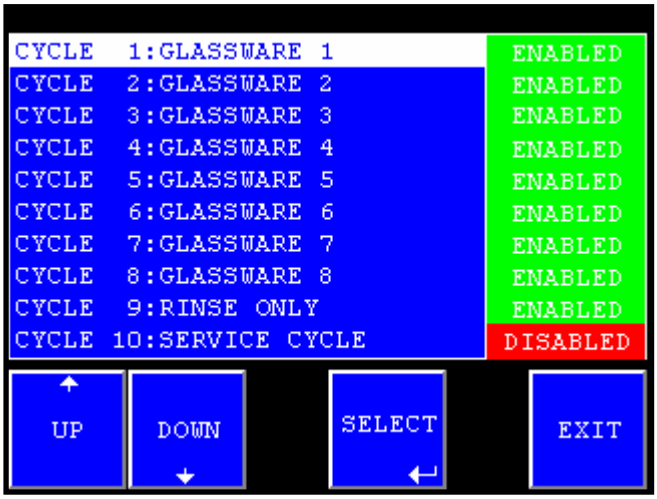
COLD - cold water usually used for the prewash
HOT - usually 120 –140 °F
MFW - MF or DI water

Use the “SELECT DRAIN/HOLD” button to chose to either drain or retain the wash solution in the washer’s sump. Pressing the button will toggle between “DRAIN” and “HOLD” selections.

After you have changed all desired parameters for a particular cycle press “ACCEPT” button accepting the changes or “CANCEL” button canceling the changes.

Select a next cycle you want to modify or press “EXIT” button to go back to the Set-up menu screen.

6.4.1.4 Cycle Lockout

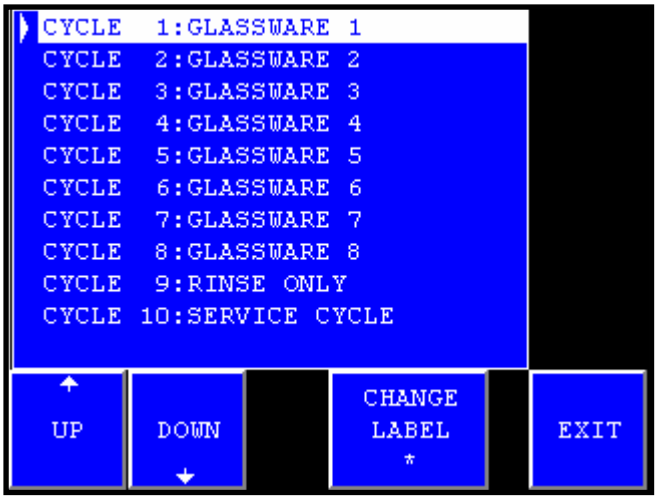


Any cycle can be locked out, so that the cycle cannot be selected for operation.

Use “UP” or ”DOWN” button to highlight the cycle you want to disable (lock out) or enable. Pressing the “SELECT” button will toggle between ENABLED/DISABLED.

6.4.1.5 Cycle Description

Each cycle can have the label (description) changed so it is more descriptive in regard to the type of the load being processed or the chemical being used to treat the load or whatever makes sense to the operation personnel.
The label can be long 20 characters maximum.

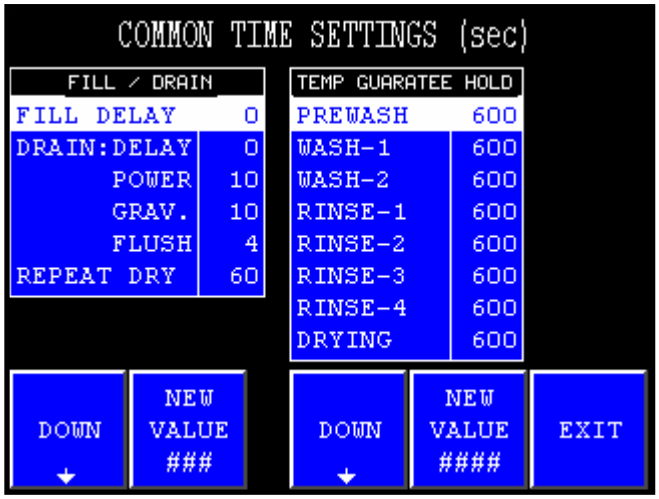


Use the “UP” or ”DOWN” button to highlight the cycle whose label will be changed. Press “CHANGE LABEL” button to bring up an alphanumeric and enter desired description.

See Appendix B of this manual or PV600 manual, page 5-11 for instructions of how to use the keypad.

Press “EXIT” button to go back to the Set-up menu screen.

6.4.1.6 Common Time Settings

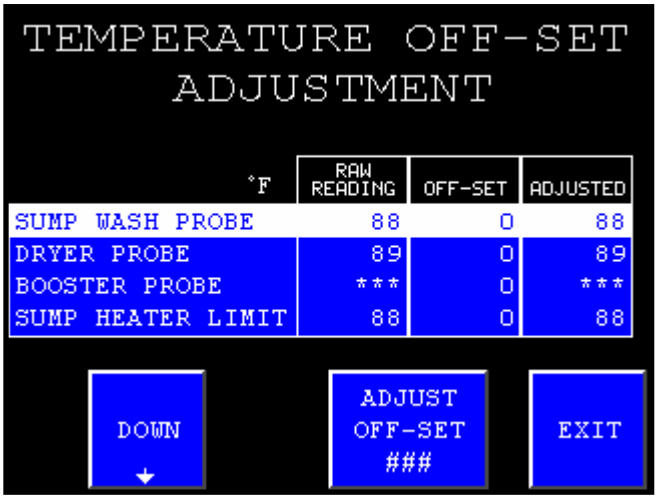


Parameters on this screen are common to all ten cycles.
The parameters are sorted in two list, each having it “DOWN” and “NEW VALUE” buttons. The left list has the parameters for adjusting the overfill (fill delay), drain times, and repeat dry. The Extra and Emergency exhaust times are disregarded.
The right list is used to set up the maximum time the system will wait (hold) for temperature reaching the guaranteed level, before generating an alarm.

Use the respective ”DOWN” button to highlight the item you want to change and press the “NEW VALUE” button. This will bring up a numeric keypad where you can enter a new value.

Press “EXIT” button to go back to the Set-up menu screen.

6.4.1.7 Temperature Reading Off-set Adjustment



This screen is provided for calibration of temperature measurements by the individual probes.

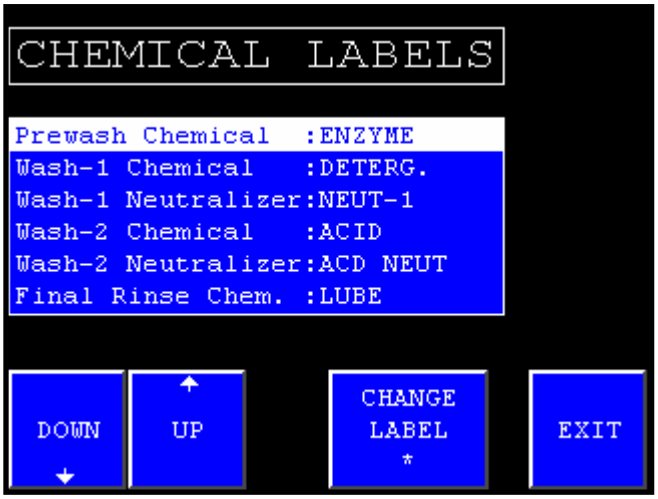
Use ”DOWN” button to highlight the item where you want to change the offset value and press the “ADJUST OFF-SET” button. This will bring up a numeric keypad where you can enter a new value.

The Actual temperature is the reading value plus the offset value.

Press “EXIT” button to go back to the Set-up menu screen.

Note: The SUMP HEATER LIMIT temperature probe is only available on the washers equipped with an electric sump heater where the overheating protection of the heating elements is needed.

6.4.1.8 Chemical Description



This screen allows you to customize the chemical label descriptions.

System provides up to eight characters for each label.

Use “UP” or ”DOWN” button to highlight a label whose description you want to change. Press “CHANGE LABEL” button to bring up an ASCII keyboard where you can enter a new label description.

Press “EXIT” button to go back to the Set-up menu screen.

6.4.1.9 System Date/Time Adjustment

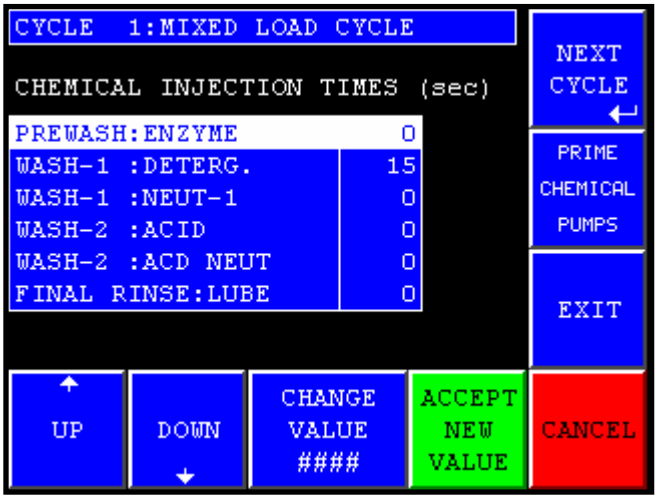
On the Set-Up Menu screen press in the right hand top corner. The numeric keypad will show up, enter the password. The system Configuration Mode screen will be shown.

Please refer to Appendix A or the PV600 User Manual, page 3-28 for instructions on how to change the system date and time.

Note: This procedure must be carried out by a qualified person, since any mistakes while accessing the control system set-up parameters may render the control system inoperable.

6.4.2 Chemical System Set-up

Access to the chemical system set-up is specifically designed for the chemical contractor. His access code will allow him to access and change only the chemical injection and circulation times and prime the chemical pumps.



Select a cycle for which you want to change time parameter(s), using the “NEXT CYCLE” button.
Use “UP” or ”DOWN” button to highlight the item you want to change and press the “CHANGE VALUE” button. This will bring a numeric keypad to the screen, where you can enter a new value for the item.

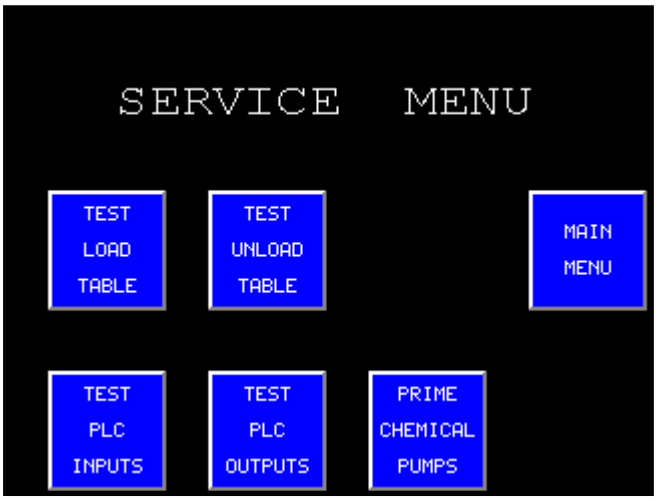
After all parameter values for a particular cycle have been changed, press the “ACCEPT” button to accept the changes or “CANCEL” button to cancel the changes.

Select next cycle you want to modify or press “EXIT” button to go back to the Set-up menu screen.

Access the chemical priming screen by pressing the “PRIME CHEMICAL PUMPS” BUTTON. See section 6.5.3 bellow.

NOTE: The access code may be required when returning from the chemical priming screen.

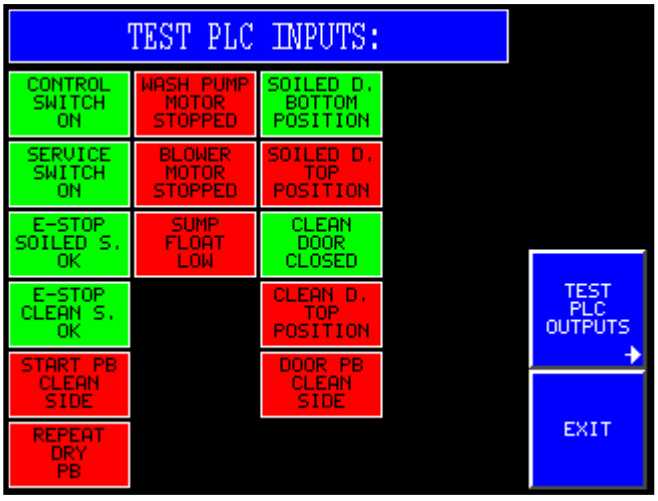
6.5 SERVICE MENU



The service mode is provided to enable on-site testing and troubleshooting the control devices on the washer, i.e. the sensors, push buttons, control valves, pumps' motors, and chemical pumps. The devices are divided in three groups: the PLC input signals, the PLC output signals and the chemical pumps system comprising of the chemical level sensors and the chemical pumps (or signals to the chemical injection controllers).
Access to the service mode is restricted by the Service switch. The switch must be in the ON position in order to access the Service Menu screen.

Note: The 'TEST LOAD TABLE' and 'TEST UNLOAD TABLE' buttons are only available and shown on the washer equipped with the load/unload tables.

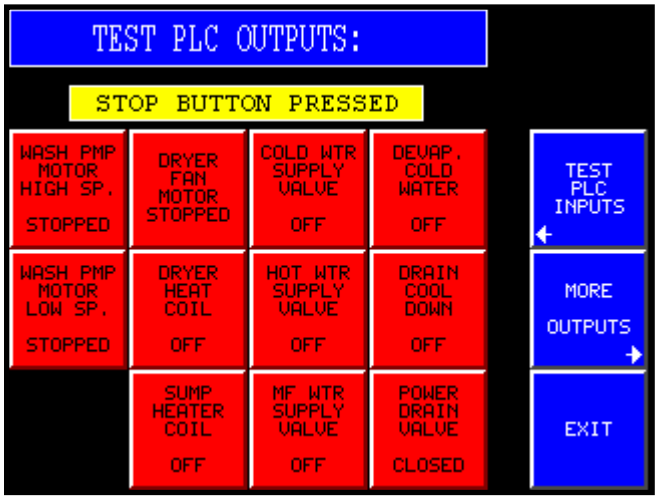
6.5.1 Test PLC Input Signals (Sensors)

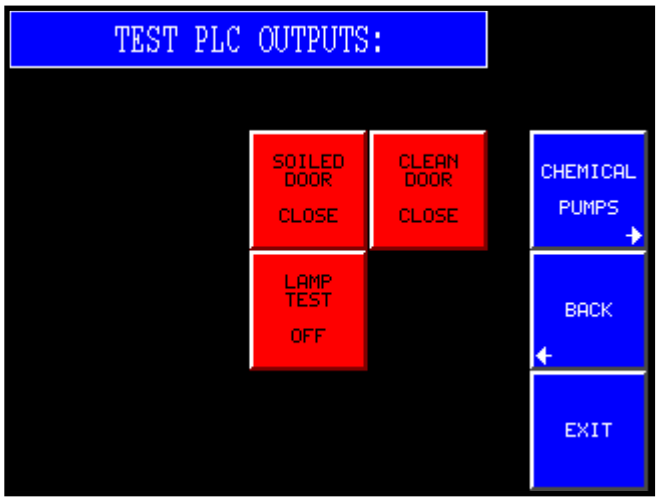


Both descriptive and graphical indication are used to better represent the status of the control device or the sensor.

Sample:

6.5.2 Test PLC Output Signals (Motors, Valves, Lights)



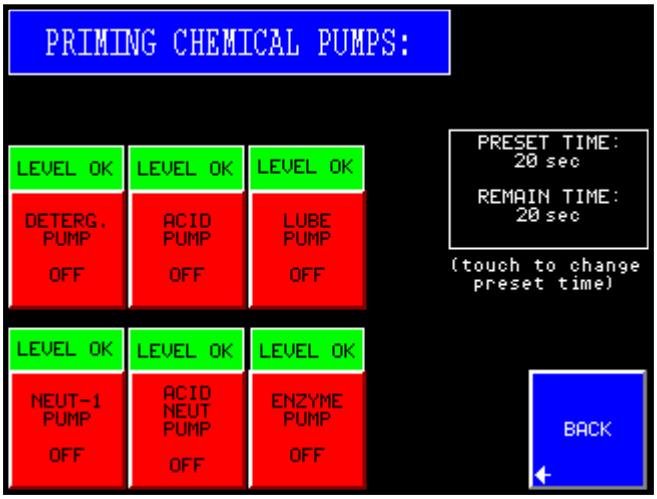


These two screen enable the testing of the washers motors, valves, door actuators and inidication lights. In order to activate a device the correspondig button needs to be pressed. To deactivate the device press the button again. Any stop button will also deactivate all active devices.

The following safety features are built into the service mode:

- None of the devices will activate if the cycle has been started or running;
- Any stop push button will deactivate all active devices, except the door actuators;
- Wash Pump will shut down if the sump level switch is not activated;
- Dryer Heater contractor will not operate unless the dryer fan is running;
- The electric sump heater will not operate if the sump level switch is not activated.
- Turning the Service switch to the OFF position will deactivate all devices.
- Exit to Main Menu will also deactivate all the devices.

6.5.3 Priming Chemical Pumps



This is convenient way to prime the chemical system and monitor the low level signals for all available chemicals.

Press the corresponding button to activate the chemical pump.
The pump will be deactivated if any of the following occurs:

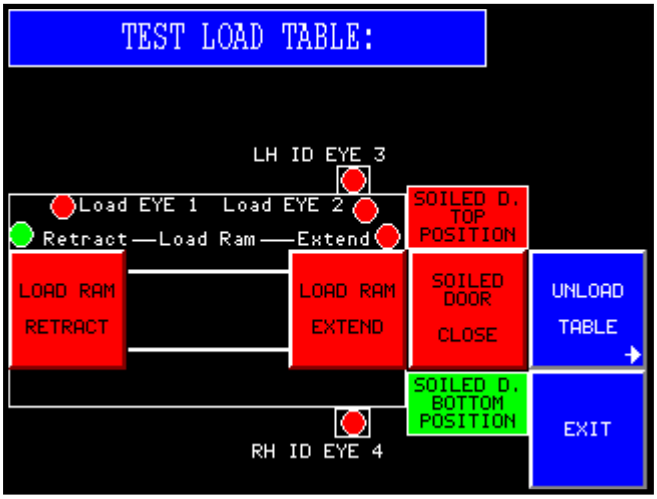
- Any stop button pressed
- Preset time elapsed
- Button pressed again
- Low level detected

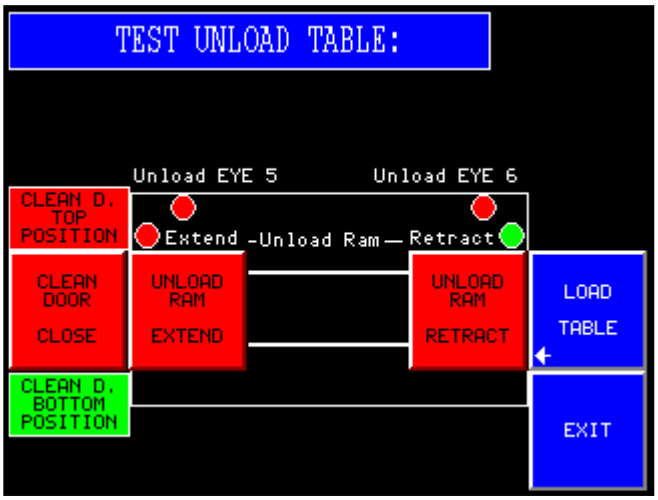
The priming preset time can easily be changed by pressing the PRESET TIME button, the numeric keypad will show up, enter new value.

Note: Only one chemical pump can be active at the time !!

6.5.4 Test Load and Unload Tables

These test screens are only available if the washer is equipped with the load and unload tables. They are accessed from the Service Menu.





The indicators are provided to detect the load(s) position and the type and the position of the loading/unloading rams. There are also indicators for the doors' position.
The push buttons enable to test the operation of the load/unload rams and the doors.

The following safety features are built in test procedure:

- Any stop push button will deactivate the load/unload rams;
- Soiled door will not operate if the load ram is not in the retracted position (away from door);
- Clean door will not operate if the unload ram is not in the retracted position (away from the door);
- Load ram will not operate unless the soiled door is open;
- Unload ram will not operate unles the clean door is open.

6.6 ALARM LIST

The alarm list holds the information about abnormal conditions that may have occurred during the washer's operation.
The following conditions are monitored:

- sump water level
- sump and dryer temperature sensors, converters and reading in regard to the alarm set-points
- soiled and clean doors' position
- load and unload rams (on Load / Unload model)
- motor starters for wash pump and the dryer fan

The list can hold up to 50 records. The latest alarm event is always inserted to the top of the list. Up to 20 alarm events may be displayed on one screen.

DD/MM/YYYY 2H:MM:SS WASH PUMP MOTOR FAILURE
DD/MM/YYYY 2H:MM:SS DRYER FAN MOTOR FAILURE
DD/MM/YYYY 2H:MM:SS SUMP LEVEL LOW
DD/MM/YYYY 2H:MM:SS SUMP TEMPERATURE SENSOR
DD/MM/YYYY 2H:MM:SS SUMP TEMPERATURE CONVERTOR
DD/MM/YYYY 2H:MM:SS DRYER TEMPERATURE SENSOR
DD/MM/YYYY 2H:MM:SS DRYER TEMPERATURE CONVERTOR
DD/MM/YYYY 2H:MM:SS BOOSTER TEMPERATURE SENSOR
DD/MM/YYYY 2H:MM:SS BOOSTER TEMPERATURE CONVERTOR
DD/MM/YYYY 2H:MM:SS SUMP HEATER HIGH TEMPERATURE*
DD/MM/YYYY 2H:MM:SS SUMP HEATER HIGH TEMPERATURE*
DD/MM/YYYY 2H:MM:SS SUMP HEATER HIGH TEMPERATURE*
DD/MM/YYYY 2H:MM:SS SOILED DOOR JAMMED
DD/MM/YYYY 2H:MM:SS CLEAN DOOR JAMMED
DD/MM/YYYY 2H:MM:SS LOAD RAM JAMMED
DD/MM/YYYY 2H:MM:SS UNLOAD RAM JAMMED
DD/MM/YYYY 2H:MM:SS PREWASH - LOW TEMPERATURE
DD/MM/YYYY 2H:MM:SS WASH 1 - LOW TEMPERATURE
DD/MM/YYYY 2H:MM:SS WASH 2 - LOW TEMPERATURE
ACKN ALL
CLEAR LIST
PREVIOUS SCREEN

Use the or buttons to scroll through the whole list.
Every alarm record has the date/time stamp, which is very useful in troubleshooting the system and tracking down the operational problems.
The red checkbox on the left side of each record indicates the acknowledgement status.
All alarms must be acknowledged in order to re-start the washer's operation.

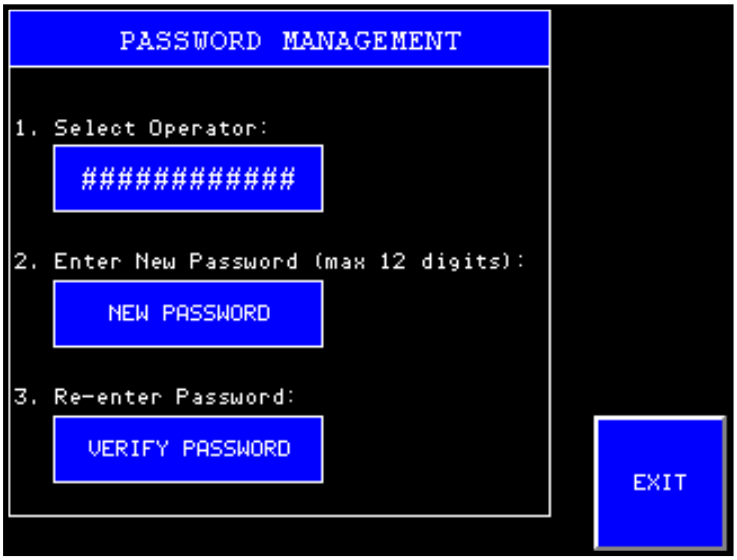
The 'ACKN ALL' button will acknowledge all active alarms. The 'CLEAR LIST' button will delete all the records from the list. The 'CLEAR LIST' button is enabled by turning the Service switch to ON position.
Both the 'ACKN ALL' and the 'CLEAR LIST' button must be held pressed for about two second to activate their respective function.
Use the 'PREVIOUS SCREEN' button to return to either Operation screen or the Main Menu screen.

6.7 PASSWORD MANAGEMENT

In addition to the service key required to access the set-up and service menus, additional four levels of access codes (passwords) have been set up for the washer's settings that require restricted access.
The SUPERVISOR & FOREMAN access, FACTORY access, and SERVICE access codes are set-up with a different level of privilege.
All access codes except the factory access code can be modified through the PV600 screen, by the supervisor or the factory access codes.

Access to Password Management Screen:

1. Turn service key ON
2. Go to Service Screen
3. Touch Top-Left corner of the screen
4. Enter the Supervisor or Factory access code, the following screen will be displayed:



5. Select the operator whose access code needs to be changed by repeatedly touching the button.
6. Touch the 'NEW PASSWORD' button and enter new password for the selected operator.
7. Touch the 'VERIFY PASSWORD' button to re-enter (verify) password.

If both 'new password' and 'verify password' numbers are the same there will be message showing 'Password changed'.
If different numbers were entered the message will read 'New and verify passwords differ'. Start over by entering 'new password'.

8. Press 'EXIT' button to return to the Service menu.

Section 7 MAINTENANCE

7.1 SCHEDULE

Set up a schedule for periodic inspection and maintenance, following established institutional practices. Scheduling preventive maintenance will be, to a large extent, dictated by the D.I. water content of the water supply.

7.2 SURFACE CLEANING

Clean the exterior surfaces of washer at least once a week. Any commercial stainless steel cleaner or polish may be used. In addition to keeping the machine looking new experience shows that a clean, well-maintained machine invariably encourages more efficient and careful use of equipment.

7.3 CHAMBER INTERIOR

Periodically or as required by the local water supply, it will be necessary to remove scale from inside surfaces of the tank. The scale can be removed with a solution of buffered hydrochloric acid or commercial "Mildstone" remover. Consult the detergent supplier for recommended procedures.

7.4 DEBRIS BASKETS AND SUMP SCREEN

a. Remove header from washer chamber.

b. Remove the debris baskets located at the bottom of the chamber by lifting it upwards.

c. Wash the screens under a forceful stream of tap water to remove all soil, and replace in the sump.

NOTE: Do not leave debris below screens to get trapped in spray jets.

7.5 STRAINERS

a. Steam trap and in-line strainers for steam, condensate and water lines should be cleaned periodically. These are cleaned with the steam shut off and the unit cooled down.

b. Using wrench, remove the hex caps from each strainer body and withdraw the screens. Clean thoroughly and replace using fresh pipe joint sealing compound.

7.6 ROTARY SPRAY HEADERS

Rotation of spray header arm should be regularly inspected during machine operation. The spray headers should rotate at about 60 RPM in a clockwise direction. Because headers are moved by the pressure of the water flowing through them, they will not rotate as they should if the spray orifices are blocked.

Cleaning: a. Loosen set screw or hitch pin (Item 9) holding each spray arm into hub assembly.

b. At a sink, remove set screw plug at tip of arm. Hold arm in vertical position under a high-pressure stream of water, or flush with hose.

c. Inspect each arm to be sure that all orifices are clear, replace plug.

d. return spray arm to hub assembly. Position arm with orifices slightly OFF-CENTER by turning in CLOCKWISE DIRECTION. Tighten the set screw. (NOTE: Newer assemblies are fitted with hitch pins that pre-set, arm's location and rotation position.)

NOTE: Orifices of arms should NOT BE ON A VERTICAL PLANE with respect to the hub axis. Rotation speed is increased if spray projection is slightly away (about 5°) from the vertical. If the header continues to rotate at less than 60 RPM, the complete assembly should be removed from the machine to permit thorough cleaning of hub and axle as well as the spray arms.

7.7 AIR INLET FILTER

The compressed air supply entering the machine pneumatic piping passes through a manual drain air filter. To drain the filter gently un-screw the blow off-valve at bottom of bowl.

7.8 PUMP MOTOR

The pump normally does not require lubrication for long periods of time. However, grease may be added by removing the slotted screw plugs at either end of motor housing.

7.9 PUMP

Pump repairs can be effected and spare parts identified by reference to figure.

Section 8 TROUBLESHOOTING

8.1 PUMP PRESSURE LOW

If machine runs with insufficient or zero pump pressure, or if machine motor operates with excessive noise:

a. Inspect pump for direction of rotation. **IT MUST ROTATE IN DIRECTION INDICATED BY ARROWS**. If pump is not rotating in the correct direction, reverse any two of the three motor leads.

b. Inspect debris baskets and tank screen for clogged condition.

c. Check the electrical connections for the liquid level switch as per wiring diagram.

d. No water or insufficient water in sump. Check the water supply.

8.2 MACHINE DOES NOT DRAIN

a. Check air supply line. Be sure it is open, 80 psi required.

b. Check to see if sufficient air is being delivered to machine by removing hose connection at air actuator on drain valve.
If air supply is open and air is NOT being delivered to air actuator, replace the 4-way air-control pilot valve.

c. Inspect butterfly valve by removing valve assembly located between the two pipe flanges.

8.2 WATER FILL (Hot, cold or DI) CONTINUES TO RUN

a. Inspect solenoid valve by removing bolts located below electric coil. Raise valve. Clean diaphragm or replace if the diaphragm is ruptured.

b. Clean foreign matter from valve seat and re-assemble.

8.4 SOLENOID VALVES

Two types of solenoid valves are used. There are maintenance and repair procedures that can be performed to extend the life of these valves. Replacement part kits are available from Skytron's Parts Department. See Figures in this manual for proper operations, piping, maintenance, cleaning, coil, replacement, valve dis-assembly and re-assembly.

Section 9 MAINTENANCE PARTS

Description	Manufacturer	Part number
Liquid Level Switch	Endress-Hauser	16-0125
Compact Fluorescent Interior Light	Standard	16-2870
3/4” Steam Solenoid Kit (Type 406)	Burkert	624492
3/4” Steam Solenoid Kit (Type 407)	Burkert	014843Q
1/2” Water Solenoid Kit	Burkert	624012
Top Spray Arm Bushings (2 pc.)	Scientek	18-1437
Bottom Quicklock Spray Bushings (2 pc.)	Scientek	18-2384
Bottom Quicklock Pop-up	Scientek	30-1431
Door Cylinder Reed Switch	SMC	20-0203
Fuses: Transformer, Pump, Dryer Fan, Heaters: see relevant El. Drawing # 4600-MP		
Fuses: Controls (F1, F2, F3)	Bussman	GMA-4A
Air Pilot Valve (single 24 VDC)	SMC	20-0590
Air Pilot Valve (single 24 VDC)	SMC	20-0595 (auto load only)
3-Bank Manifold	SMC	20-0579

Appendix A: CONTROL PANELS

Appendix B: MICRO PROCESSOR INPUT/OUTPUT ADRESSES

PLC I/O LIST

PROJECT: 1428 SW 4600 GWD

Rev: Sept 6, 2005

Location	ADDRESS	DEVICE	DESCRIPTION	REMARK
ML 1500 BASE UNIT INPUT CARD DI-0	I:0.0/00	SW-1	CONTROL OFF/ON SWITCH	
	I:0.0/01	SW-2	SERVICE OFF/ON SWITCH	
	I:0.0/02	PB-1	E-STOP PUSH BUTTON - SOILED SIDE	
	I:0.0/03			
	I:0.0/04			
	I:0.0/05			
	I:0.0/06	FLOAT SW.	MFW TANK LEVEL SWITCH	
	I:0.0/07	MAG SW	SOILED SIDE DOOR CLOSED POS. SW.	
	I:0.0/08	MAG SW	SOILED SIDE DOOR OPEN POS. SW.	
	I:0.0/09			
	I:0.0/10			
	I:0.0/11	C1-AUX	WASHER PUMP RUNNING	
	I:0.0/12	C2-AUX	DRYER FAN MOTOR RUNNING	
	I:0.0/13	LS-1	SUMP LEVEL SWITCH	
	I:0.0/14			
	I:0.0/15			
EXPANSION INPUT CARD DI-1 (1769-IQ16)	I:1.0/00	LL-1	CHEMICAL-1 LOW LEVEL	optional
	I:1.0/01	LL-2	CHEMICAL-1 NEUTRAL LOW LEVEL	optional
	I:1.0/02	LL-3	CHEMICAL-2 LOW LEVEL	optional
	I:1.0/03	LL-4	CHEMICAL-2 NEUTRAL LOW LEVEL	optional
	I:1.0/04			
	I:1.0/05			
	I:1.0/06			
	I:1.0/07			
	I:1.0/08			
	I:1.0/09			
	I:1.0/10			
	I:1.0/11			
	I:1.0/12			
	I:1.0/13			
	I:1.0/14			
	I:1.0/15			
EXPANSION INPUT CARD AI-3 (1769-IT6)	I:3.0	TC-1	SUMP TEMPERATURE	
	I:3.1	TC-2	DRYER TEMPERATURE	
	I:3.2			
	I:3.3			
	I:3.4			
	I:3.5		CONDUCTIVITY SIGNAL	

PLC I/O LIST

PROJECT: 1428 SW 4600 GWD

Rev: Sept 6, 2005

Location	ADDRESS	DEVICE	DESCRIPTION	REMARK
ML 1500 BASE UNIT INPUT CARD DI-0	I:0.0/00	SW-1	CONTROL OFF/ON SWITCH	
	I:0.0/01	SW-2	SERVICE OFF/ON SWITCH	
	I:0.0/02	PB-1	E-STOP PUSH BUTTON - SOILED SIDE	
	I:0.0/03			
	I:0.0/04			
	I:0.0/05			
	I:0.0/06	FLOAT SW.	MFW TANK LEVEL SWITCH	
	I:0.0/07	MAG SW	SOILED SIDE DOOR CLOSED POS. SW.	
	I:0.0/08	MAG SW	SOILED SIDE DOOR OPEN POS. SW.	
	I:0.0/09			
	I:0.0/10			
	I:0.0/11	C1-AUX	WASHER PUMP RUNNING	
	I:0.0/12	C2-AUX	DRYER FAN MOTOR RUNNING	
	I:0.0/13	LS-1	SUMP LEVEL SWITCH	
	I:0.0/14			
	I:0.0/15			
EXPANSION INPUT CARD DI-1 (1769-IQ16)	I:1.0/00	LL-1	CHEMICAL-1 LOW LEVEL	optional
	I:1.0/01	LL-2	CHEMICAL-1 NEUTRAL LOW LEVEL	optional
	I:1.0/02	LL-3	CHEMICAL-2 LOW LEVEL	optional
	I:1.0/03	LL-4	CHEMICAL-2 NEUTRAL LOW LEVEL	optional
	I:1.0/04			
	I:1.0/05			
	I:1.0/06			
	I:1.0/07			
	I:1.0/08			
	I:1.0/09			
	I:1.0/10			
	I:1.0/11			
	I:1.0/12			
	I:1.0/13			
	I:1.0/14			
	I:1.0/15			
EXPANSION INPUT CARD AI-3 (1769-IT6)	I:3.0	TC-1	SUMP TEMPERATURE	
	I:3.1	TC-2	DRYER TEMPERATURE	
	I:3.2			
	I:3.3			
	I:3.4			
	I:3.5		CONDUCTIVITY SIGNAL	

PLC I/O LIST

PROJECT: 1428 SW 4600 GWD

Rev: Sept 6, 2005

Location	ADDRESS	DEVICE	DESCRIPTION	REMARK
ML 1500 BASE UNIT OUTPUT CARD DO-0	O:0.0/00	C1	MAIN WASH PUMP	
	O:0.0/01	C2	DRYER FAN BLOWER	
	O:0.0/02	C3	DRYER HEAT COIL	
	O:0.0/03	ES1	SUMP HEATER	
	O:0.0/04	ES2	COLD WATER SUPPLY	
	O:0.0/05	ES3	HOUSE HOT WATER SUPPLY	
	O:0.0/06	ES4	MF/DI WATER SUPPLY & AIR RELIEF	
	O:0.0/07	ES5	DRAIN COOL DOWN	optional
	O:0.0/08	ES6	CONDENSING COIL COLD WATER	
	O:0.0/09			
	O:0.0/10	AS4	MFW TANK DISCHARGE VALVE	
	O:0.0/11	AS5	JET-WASH VALVE	
EXPANSION OUTPUT CARD D0-2 (1769-OB16)	O:2.0/00	AS1	DRAIN VALVE - AIR OPERATED	
	O:2.0/01	AS2	DOOR ACTUATOR - SOILED SIDE	
	O:2.0/02			
	O:2.0/03			
	O:2.0/04			
	O:2.0/05	ES7	MFW TANK AIR-IN (PRESSURIZE)	
	O:2.0/06			
	O:2.0/07			
	O:2.0/08			
	O:2.0/09			
	O:2.0/10	CP1	CHEMICAL-1 PUMP	
	O:2.0/11	CP2	CHEMICAL-1 NEUTRALIZER PUMP	optional
	O:2.0/12	CP3	CHEMICAL-2 PUMP	
	O:2.0/13	CP4	CHEMICAL-2 NEUTRALIZER PUMP	optional
	O:2.0/14	CP5	LUBE PUMP	optional
	O:2.0/15	CP6	ENZYME PUMP	optional

CONTROL PANEL ARRANGEMENT
&
WIRING DIAGRAMS

WASHER MODEL: SW4600

DRAWING LIST:

No.	Drawing No.	Description	Remarks
1	4600–TITLE	TITLE PAGE	
2	4600–SYS	SYSTEM CONFIGURATION	
3	4600–PNL	PANEL LAYOUT: FRONT & BACK PLATE VIEW	
4	4600–MP	MAIN POWER DISTRIBUTION	
5	4600–CP	CONTROL POWER DISTRIBUTION: 120VAC / 24VDC	
6	4600–DI–0	PLC INPUT CARD DI–0 (16Point, 24VDC SINK)	
7	4600–DI–1	PLC INPUT CARD DI–1 (16Point, 24VDC SINK)	
8	4600–DO–0	PLC OUTPUT CARD DO–0 (12Point, 24VDC)	
9	4600–DO–2	PLC OUTPUT CARD DO–2 (16Point, 24VDC)	
10	4600–AI–3	PLC INPUT CARD AI–3 (6CH, T/C INPUT)	
11			
12			
13			
14			
15			

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Richmond, BC, Canada, V6X 1T3
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E		
D		
C		
B	Sept 7, 2005	D. Pekic
A	March 9, 2005	D. Pekic

WASHER CONTROL SYSTEM
SW 4600

CONTROL SYSTEM LAYOUT

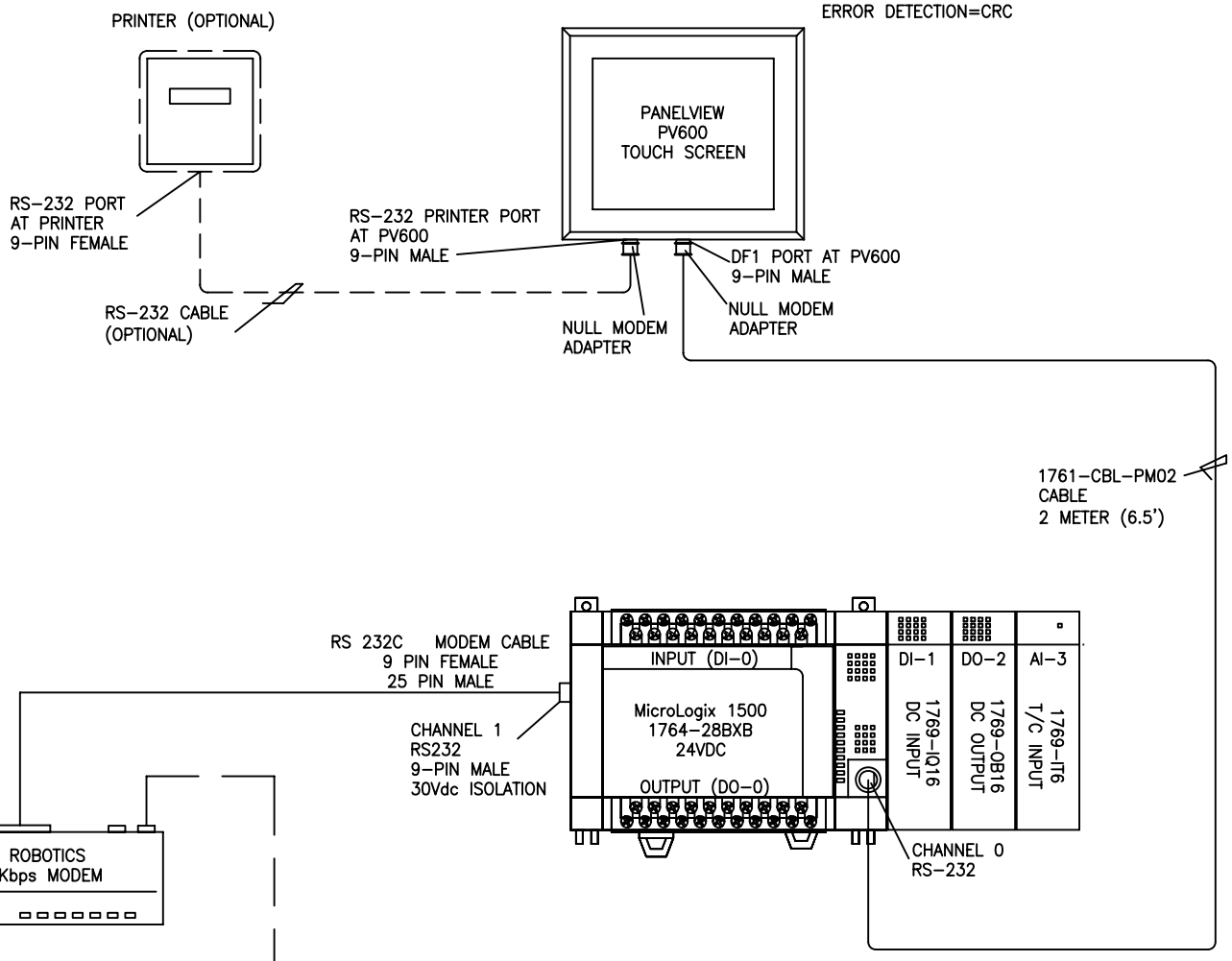
DWG No. 4600–TITLE

PRINTER PORT SETTING AT PV600:

NO HANDSHAKING
BAUD=9600
PARITY=EVEN
DATA=8
STOP=1

DF1 COMM PORT SETTING AT PV600:

DF1 FULL DUPLEX
BAUD=19200
PARITY=NONE
STOP BIT=1
NO HANDSHAKING
ERROR DETECTION=CRC



DIP SW SETTINGS
AT MODEM:

1 = DOWN
2 = UP
3 = DOWN
4 = UP
5 = UP
6 = UP
7 = UP
8 = DOWN

PHONE LINE
(supplied by others)

CH1 COMM PORT SETTING AT PLC:

DF1 FULL DUPLEX
BAUD=19200
PARITY=NONE
NO HANDSHAKING
ERROR DETECTION=CRC

CH0 COMM PORT SETTING AT PLC:

DF1 FULL DUPLEX
BAUD=19200
PARITY=NONE
NO HANDSHAKING
ERROR DETECTION=CRC

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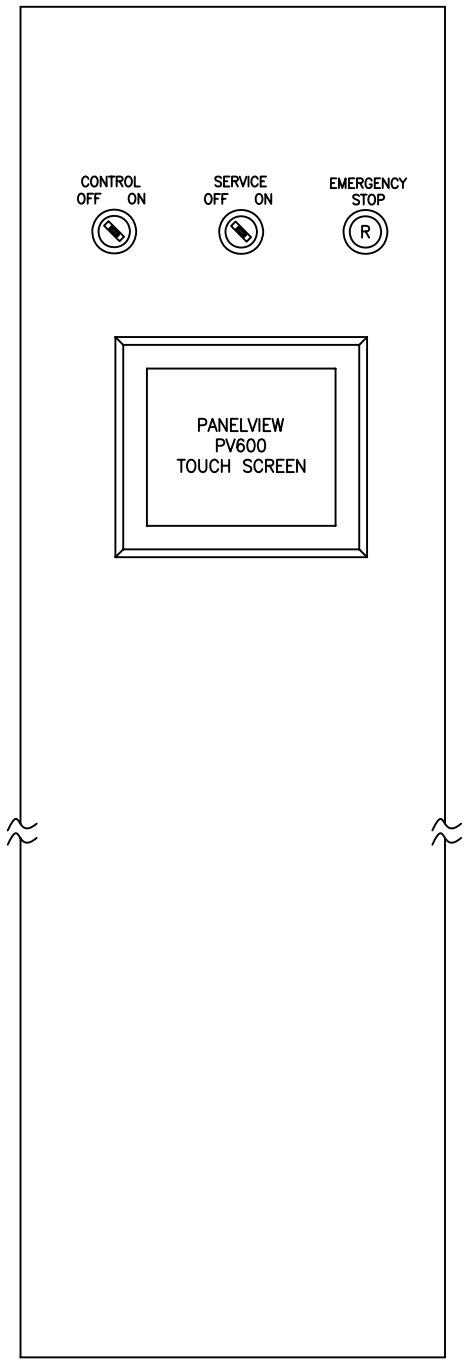
WASHER CONTROL SYSTEM
SW 4600

CONTROL SYSTEM LAYOUT

DWG No. 4600-SYS



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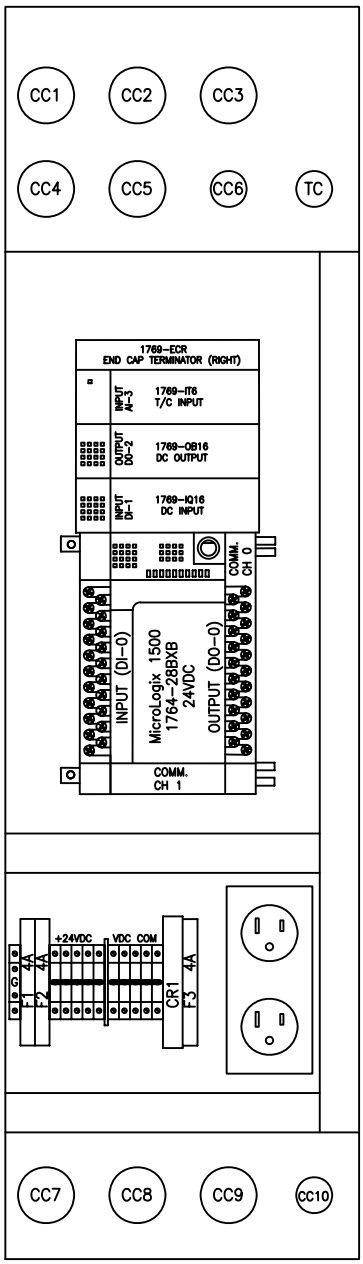

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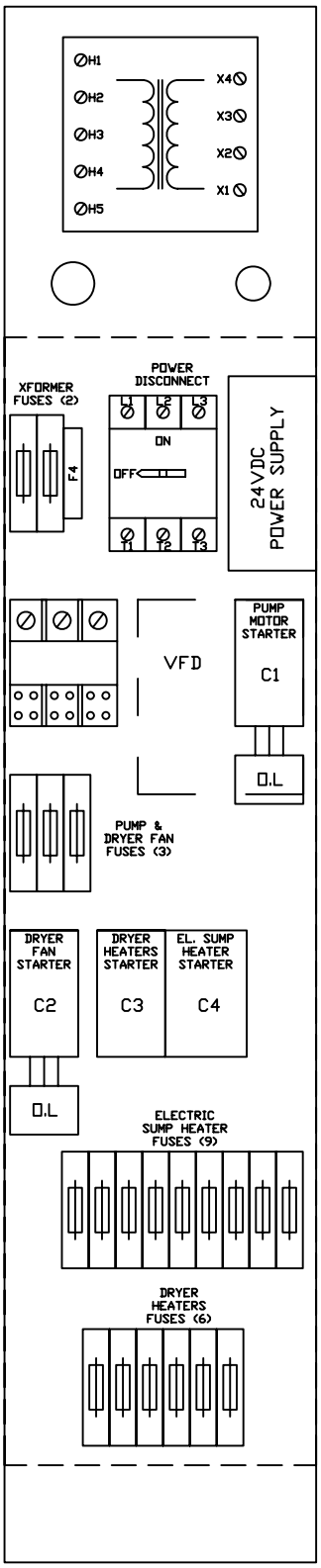

<POWER BOARD >

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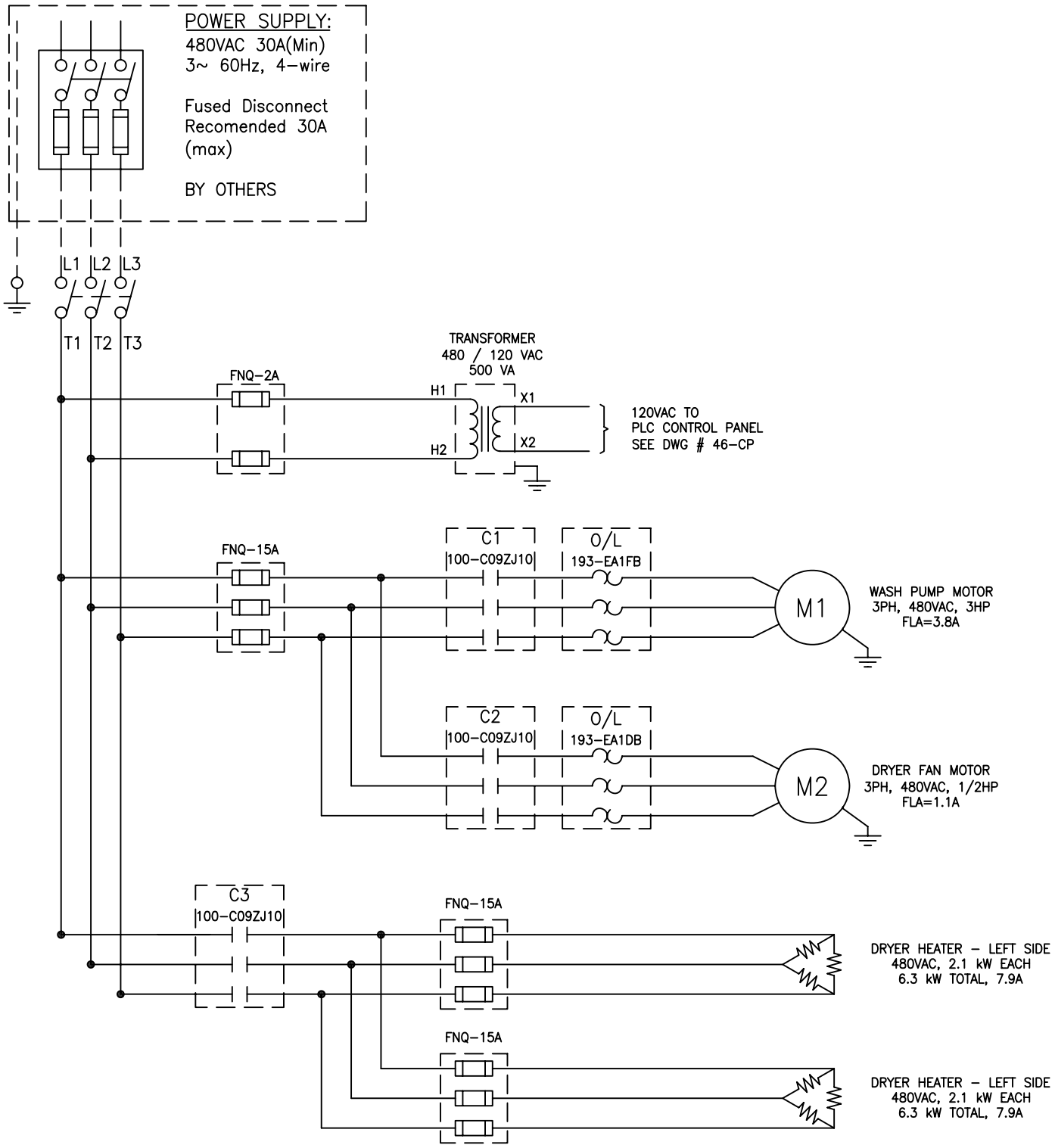
WASHER CONTROL SYSTEM
SW 4600

CONTROL PANEL LAYOUT

DWG No. 4600-PNL



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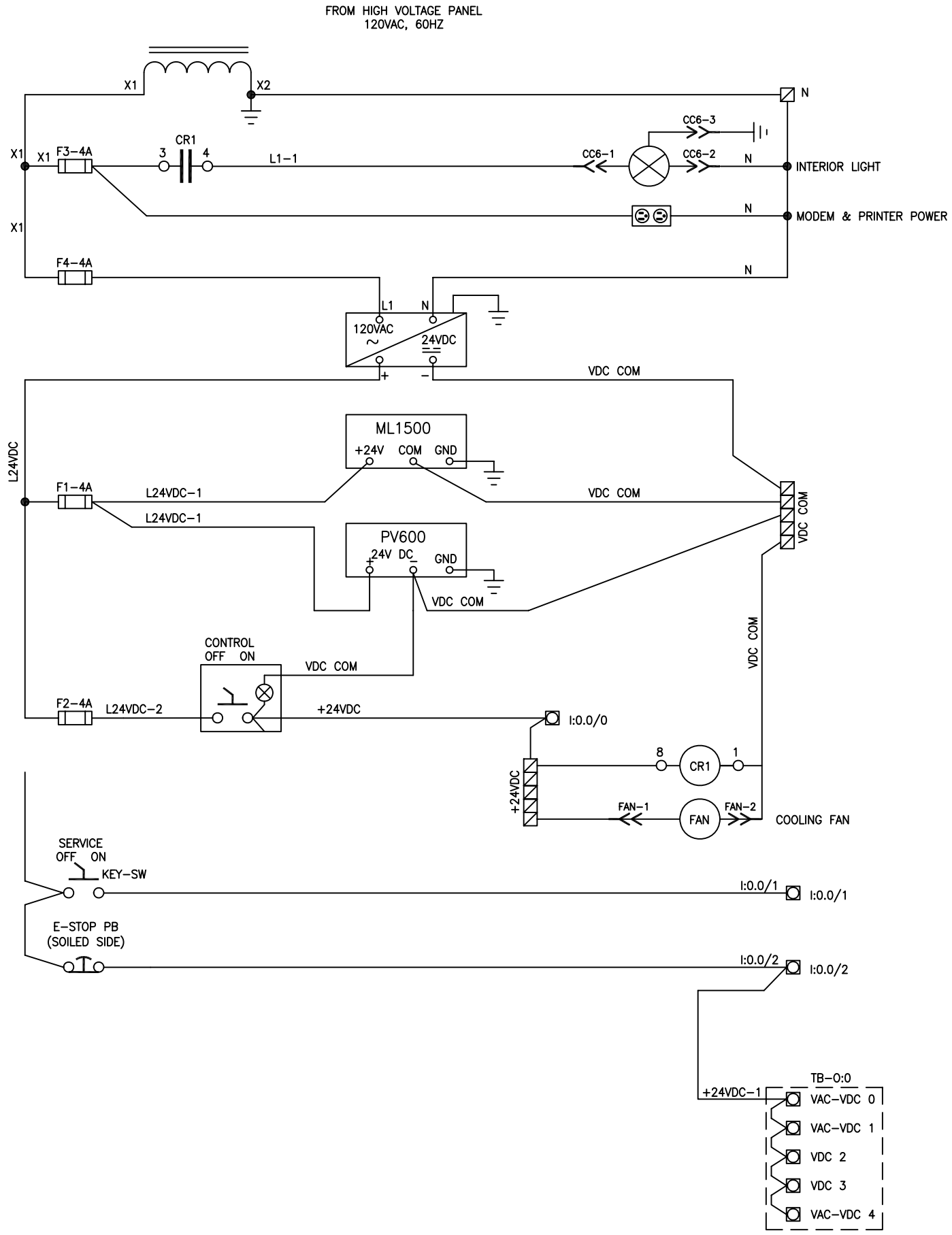
WASHER CONTROL SYSTEM
SkyTek 4600 (Steam)
MAIN POWER 480V

DWG No. 4600-MP



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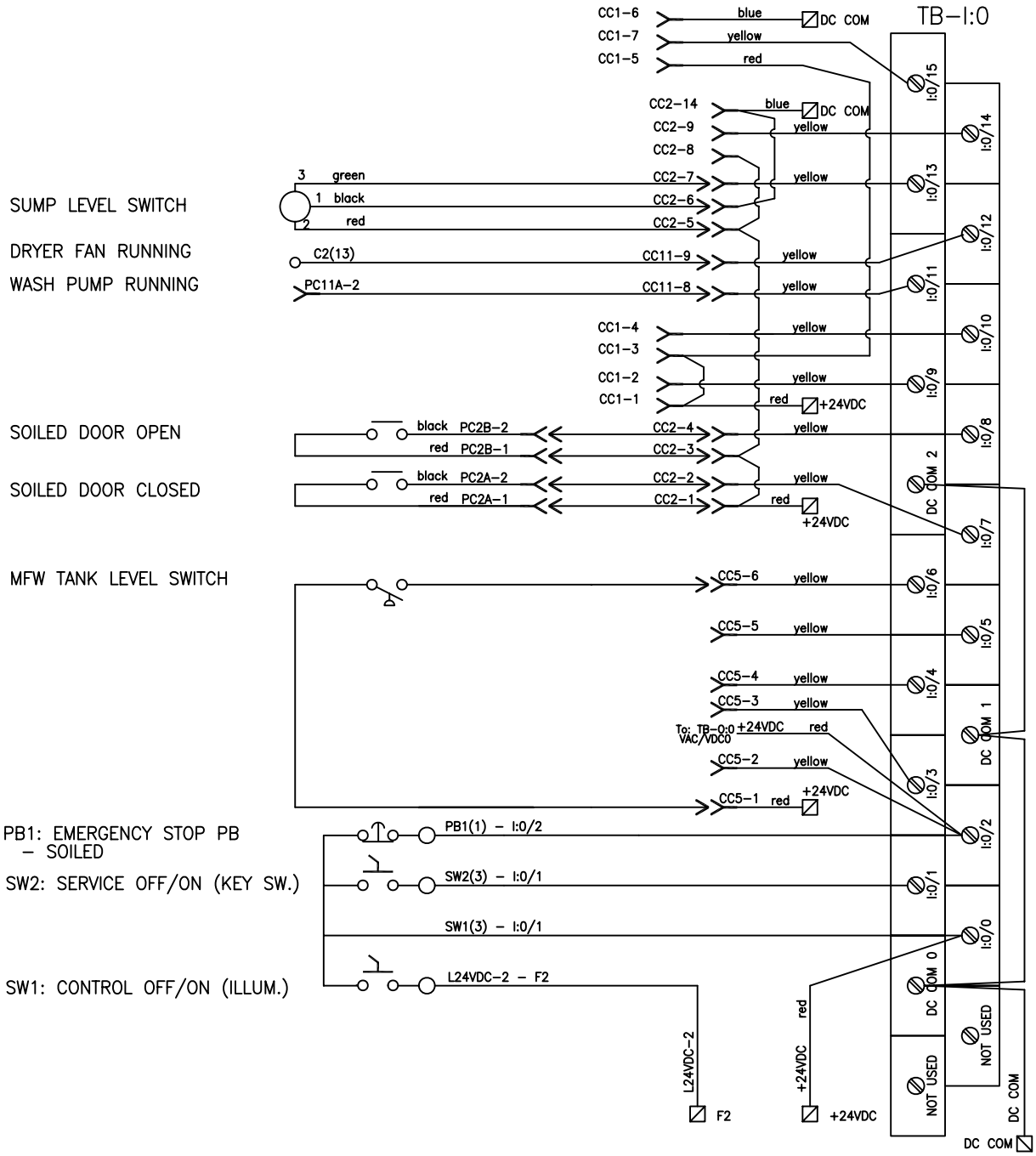
WASHER CONTROL SYSTEM
SW 4600

CONTROL POWER

DWG No. 4600-CP



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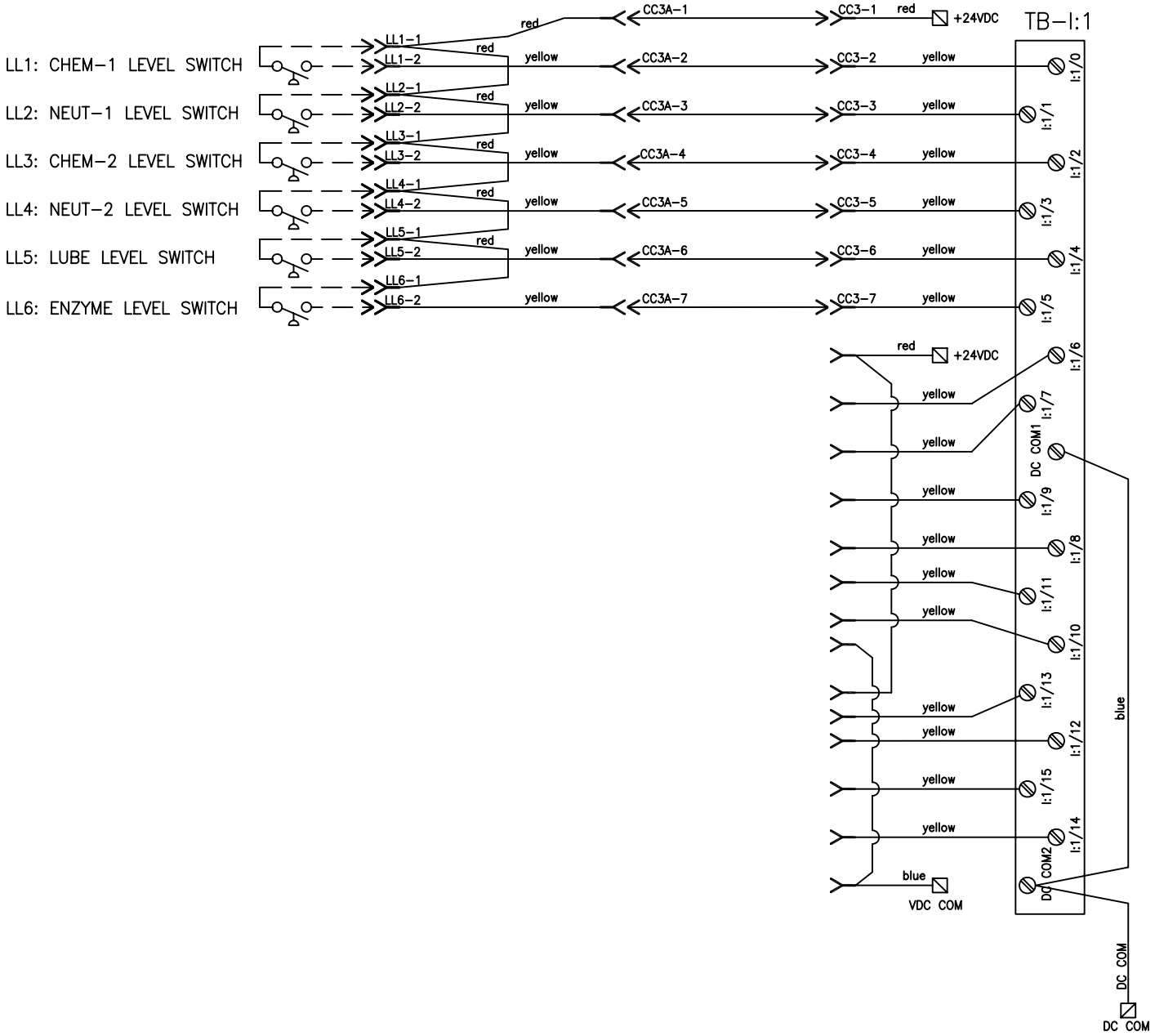
WASHER CONTROL SYSTEM
SW 4600

INPUT MODULE DI-0

DWG No. 4600-DI-0



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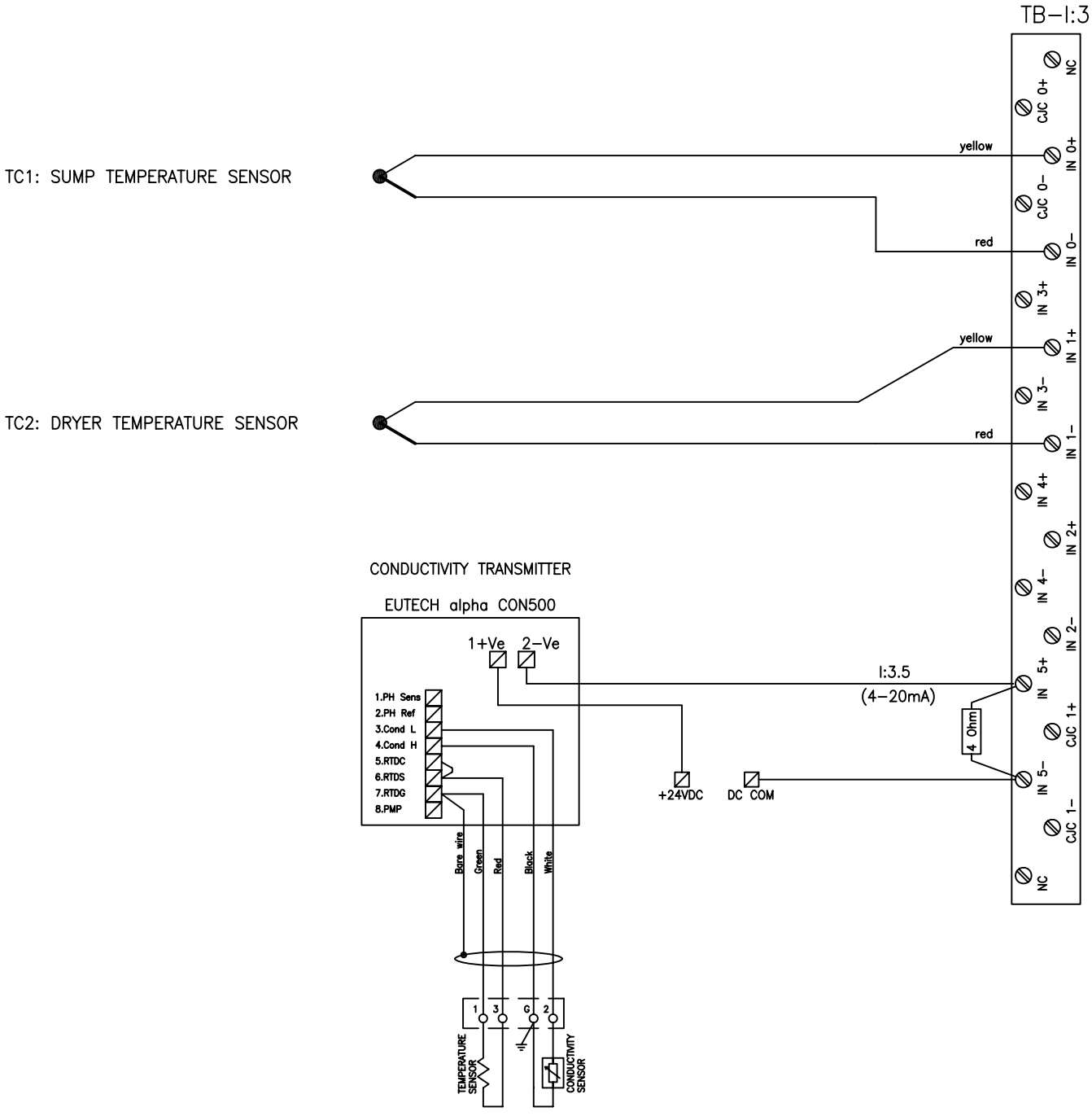
WASHER CONTROL SYSTEM
SW 4600

INPUT MODULE DI-1

DWG No. 4600-DI-1



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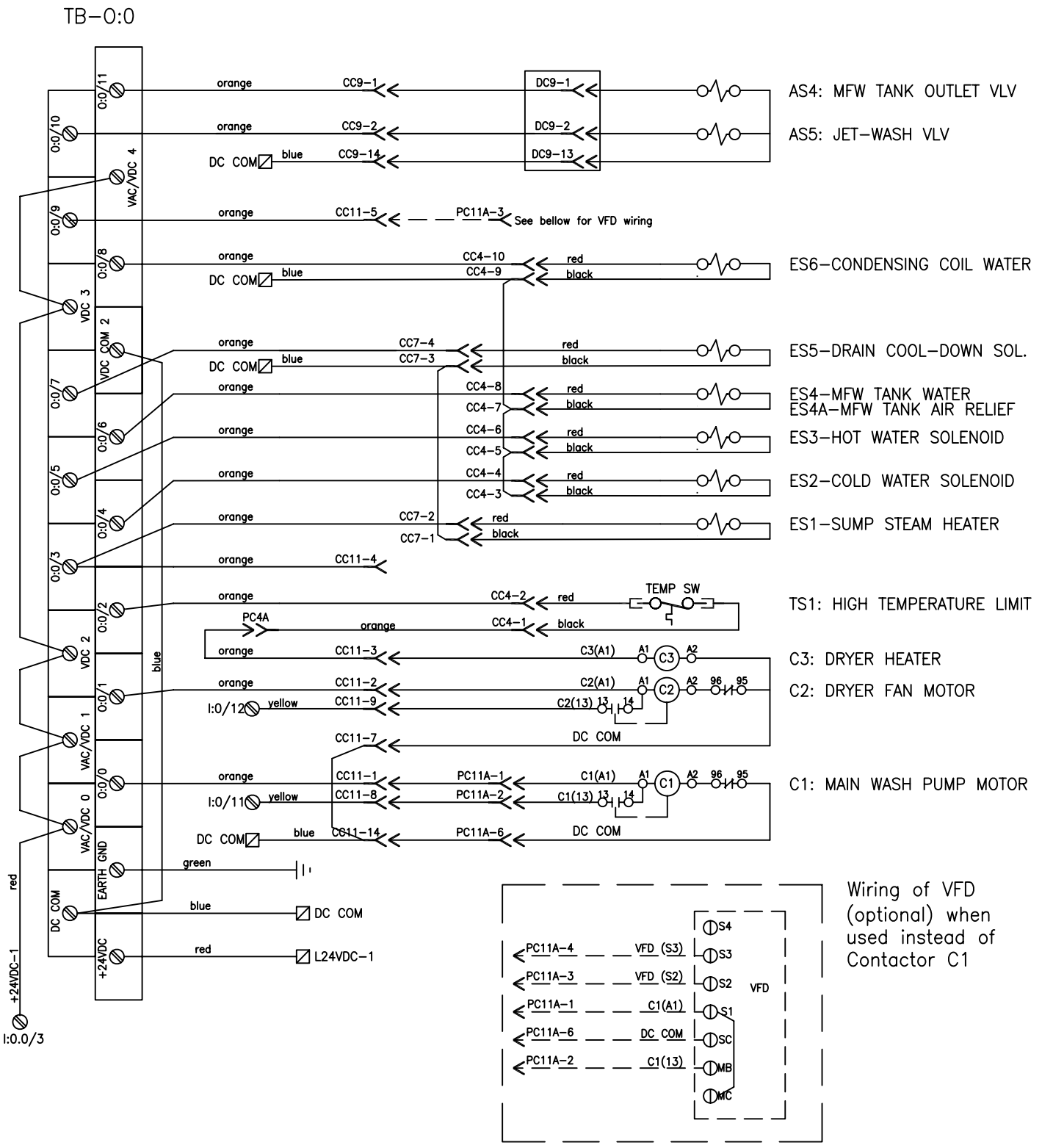
WASHER CONTROL SYSTEM
SW 4600

ANALOG INPUT MODULE AI-3

DWG No. 4600-AI-3



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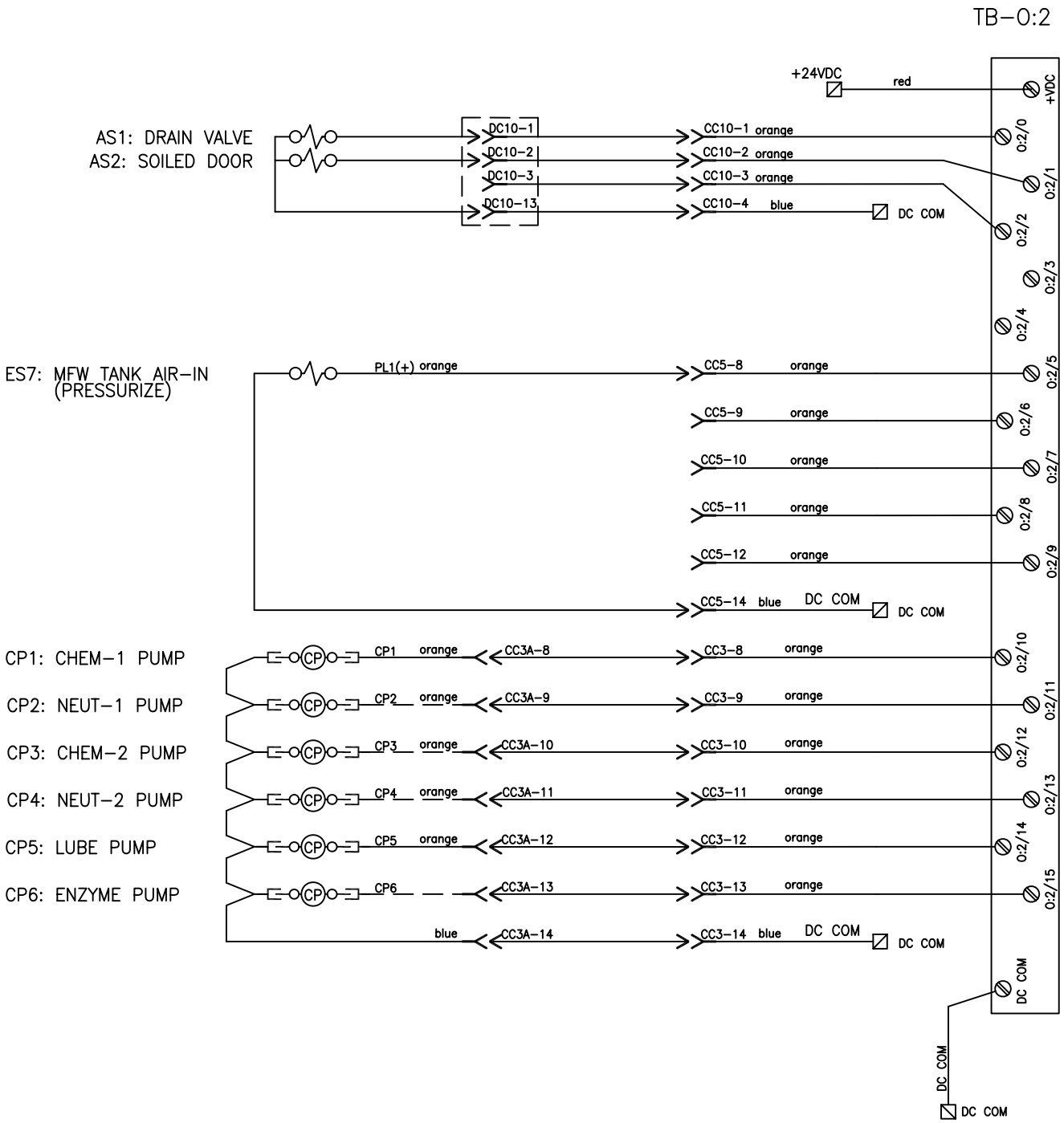
WASHER CONTROL SYSTEM
SW 4600

□UTPUT M□DULE D□–0

DWG No. 4600–D□–0



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WASHER CONTROL SYSTEM
SW 4600

□UTPUT M□DULE D□-2

DWG No. 4600-D□-2

Appendix D: PROGRAM CYCLE CHARTS 1-10 AND COMMON SETTINGS

CYCLE 1: GLASSWARE 1

STEP DESCRIPTION	STEP STAGE	STEP TIME (sec)	TEMPERATURE (°F) HEATING SP	TEMPERATURE (°F) GUARANTEE SP	WATER SUPPLY	DRAIN/HOLD PRESET
PREWASH	Fill				HOUSE HOT	
	Enzyme Inject	0				
	Washing	60	32	32		
	Drain					DRAIN
WASH-1	Fill				HOUSE HOT	
	Chem-1 Inject (DET)	0 µS *				
	Chem-1 Wash	60	140	32		
	Neut-1 Inject	0				
	Neut-1 Circulation	0				
	Drain					DRAIN
WASH-2	Fill				HOUSE HOT	
	Chem-2 Inject	0 µS *				
	Chem-2 Wash	60	140	32		
	Neut-2 Inject	15				
	Neut-2 Circulation	30				
	Drain					
RINSE 1	Fill				HOUSE HOT	
	Washing	60	140	32		
	Drain					DRAIN
RINSE 2	Fill				HOUSE HOT	
	Washing	180	189	182		
	Drain					DRAIN
RINSE 3	Fill				HOUSE HOT	
	Lube Inject	0				
	Washing	0	140	32		
	Drain					DRAIN
RINSE 4	Fill				MFW TANK	
	Washing	3-shots	32	32		
	Drain					DRAIN
DRYING	Drying	500	250	180		
JET-WASH	Washing	5				
	Pausing	5				
> cycle end <						

*** NOTE: chemical injection to be adjusted by user according to specific cycle requirements and detergent used**

CYCLE 2: GLASSWARE 2

STEP DESCRIPTION	STEP STAGE	STEP TIME (sec)	TEMPERATURE (°F) HEATING SP	TEMPERATURE (°F) GUARANTEE SP	WATER SUPPLY	DRAIN/HOLD PRESET
PREWASH	Fill				HOUSE HOT	
	Enzyme Inject	0				
	Washing	60	32	32		
	Drain					DRAIN
WASH-1	Fill				HOUSE HOT	
	Chem-1 Inject (DET)	0 µS *				
	Chem-1 Wash	60	140	32		
	Neut-1 Inject	0				
	Neut-1 Circulation	0				
	Drain					DRAIN
WASH-2	Fill				HOUSE HOT	
	Chem-2 Inject	0 µS *				
	Chem-2 Wash	60	140	32		
	Neut-2 Inject	15				
	Neut-2 Circulation	30				
	Drain					DRAIN
RINSE 1	Fill				HOUSE HOT	
	Washing	60	140	32		
	Drain					DRAIN
RINSE 2	Fill				HOUSE HOT	
	Washing	180	189	182		
	Drain					DRAIN
RINSE 3	Fill				HOUSE HOT	
	Lube Inject	0				
	Washing	0	140	32		
	Drain					DRAIN
RINSE 4	Fill				MFW TANK	
	Washing	3-shots	32	32		
	Drain					DRAIN
DRYING	Drying	500	250	180		
JET-WASH	Washing	5				
	Pausing	5				
> cycle end <						

*** NOTE: chemical injection to be adjusted by user according to specific cycle requirements and detergent used**

CYCLE 3: GLASSWARE 3

STEP DESCRIPTION	STEP STAGE	STEP TIME (sec)	TEMPERATURE (°F) HEATING SP	TEMPERATURE (°F) GUARANTEE SP	WATER SUPPLY	DRAIN/HOLD PRESET
PREWASH	Fill				HOUSE HOT	
	Enzyme Inject	0				
	Washing	60	32	32		
	Drain					DRAIN
WASH-1	Fill				HOUSE HOT	
	Chem-1 Inject (DET)	0 µS *				
	Chem-1 Wash	60	140	32		
	Neut-1 Inject	0				
	Neut-1 Circulation	0				
	Drain					DRAIN
WASH-2	Fill				HOUSE HOT	
	Chem-2 Inject	0 µS *				
	Chem-2 Wash	60	140	32		
	Neut-2 Inject	15				
	Neut-2 Circulation	30				
	Drain					DRAIN
RINSE 1	Fill				HOUSE HOT	
	Washing	60	140	32		
	Drain					DRAIN
RINSE 2	Fill				HOUSE HOT	
	Washing	180	189	182		
	Drain					DRAIN
RINSE 3	Fill				HOUSE HOT	
	Lube Inject	0				
	Washing	0	140	32		
	Drain					DRAIN
RINSE 4	Fill				MFW TANK	
	Washing	3-shots	32	32		
	Drain					DRAIN
DRYING	Drying	500	250	180		
JET-WASH	Washing	5				
	Pausing	5				
> cycle end <						

*** NOTE:** **chemical injection to be adjusted by user according to specific cycle requirements and detergent used**

CYCLE 4: GLASSWARE 4

STEP DESCRIPTION	STEP STAGE	STEP TIME (sec)	TEMPERATURE (°F) HEATING SP	TEMPERATURE (°F) GUARANTEE SP	WATER SUPPLY	DRAIN/HOLD PRESET
PREWASH	Fill				HOUSE HOT	
	Enzyme Inject	0				
	Washing	60	32	32		
	Drain					DRAIN
WASH-1	Fill				HOUSE HOT	
	Chem-1 Inject (DET)	0 µS *				
	Chem-1 Wash	60	140	32		
	Neut-1 Inject	0				
	Neut-1 Circulation	0				
	Drain					DRAIN
WASH-2	Fill				HOUSE HOT	
	Chem-2 Inject	0 µS *				
	Chem-2 Wash	60	140	32		
	Neut-2 Inject	15				
	Neut-2 Circulation	30				
	Drain					DRAIN
RINSE 1	Fill				HOUSE HOT	
	Washing	60	140	32		
	Drain					DRAIN
RINSE 2	Fill				HOUSE HOT	
	Washing	180	189	182		
	Drain					DRAIN
RINSE 3	Fill				HOUSE HOT	
	Lube Inject	0				
	Washing	0	140	32		
	Drain					DRAIN
RINSE 4	Fill				MFW TANK	
	Washing	3-shots	32	32		
	Drain					DRAIN
DRYING	Drying	500	250	180		
JET-WASH	Washing	5				
	Pausing	5				
> cycle end <						

*** NOTE:** **chemical injection to be adjusted by user according to specific cycle requirements and detergent used**

CYCLE 5: GLASSWARE 5

STEP DESCRIPTION	STEP STAGE	STEP TIME (sec)	TEMPERATURE (°F) HEATING SP	TEMPERATURE (°F) GUARANTEE SP	WATER SUPPLY	DRAIN/HOLD PRESET
PREWASH	Fill				HOUSE HOT	
	Enzyme Inject	0				
	Washing	60	32	32		
	Drain					DRAIN
WASH-1	Fill				HOUSE HOT	
	Chem-1 Inject (DET)	0 µS *				
	Chem-1 Wash	60	140	32		
	Neut-1 Inject	0				
	Neut-1 Circulation	0				
	Drain					DRAIN
WASH-2	Fill				HOUSE HOT	
	Chem-2 Inject	0 µS *				
	Chem-2 Wash	60	140	32		
	Neut-2 Inject	15				
	Neut-2 Circulation	30				
	Drain					DRAIN
RINSE 1	Fill				HOUSE HOT	
	Washing	60	140	32		
	Drain					DRAIN
RINSE 2	Fill				HOUSE HOT	
	Washing	180	189	182		
	Drain					DRAIN
RINSE 3	Fill				HOUSE HOT	
	Lube Inject	0				
	Washing	0	140	32		
	Drain					DRAIN
RINSE 4	Fill				MFW TANK	
	Washing	3-shots	32	32		
	Drain					DRAIN
DRYING	Drying	500	250	180		
JET-WASH	Washing	5				
	Pausing	5				
> cycle end <						

*** NOTE:** **chemical injection to be adjusted by user according to specific cycle requirements and detergent used**

CYCLE 6: GLASSWARE 6

STEP DESCRIPTION	STEP STAGE	STEP TIME (sec)	TEMPERATURE (°F) HEATING SP	TEMPERATURE (°F) GUARANTEE SP	WATER SUPPLY	DRAIN/HOLD PRESET
PREWASH	Fill				HOUSE HOT	
	Enzyme Inject	0				
	Washing	60	32	32		
	Drain					DRAIN
WASH-1	Fill				HOUSE HOT	
	Chem-1 Inject (DET)	0 µS *				
	Chem-1 Wash	60	140	32		
	Neut-1 Inject	0				
	Neut-1 Circulation	0				
	Drain					DRAIN
WASH-2	Fill				HOUSE HOT	
	Chem-2 Inject	0 µS *				
	Chem-2 Wash	60	140	32		
	Neut-2 Inject	15				
	Neut-2 Circulation	30				
	Drain					DRAIN
RINSE 1	Fill				HOUSE HOT	
	Washing	60	140	32		
	Drain					DRAIN
RINSE 2	Fill				HOUSE HOT	
	Washing	180	189	182		
	Drain					DRAIN
RINSE 3	Fill				HOUSE HOT	
	Lube Inject	0				
	Washing	0	140	32		
	Drain					DRAIN
RINSE 4	Fill				MFW TANK	
	Washing	3-shots	32	32		
	Drain					DRAIN
DRYING	Drying	500	250	180		
JET-WASH	Washing	5				
	Pausing	5				
> cycle end <						

*** NOTE: chemical injection to be adjusted by user according to specific cycle requirements and detergent used**

CYCLE 7: GLASSWARE 7

STEP DESCRIPTION	STEP STAGE	STEP TIME (sec)	TEMPERATURE (°F) HEATING SP	TEMPERATURE (°F) GUARANTEE SP	WATER SUPPLY	DRAIN/HOLD PRESET
PREWASH	Fill				HOUSE HOT	
	Enzyme Inject	0				
	Washing	60	32	32		
	Drain					DRAIN
WASH-1	Fill				HOUSE HOT	
	Chem-1 Inject (DET)	0 µS *				
	Chem-1 Wash	60	140	32		
	Neut-1 Inject	0				
	Neut-1 Circulation	0				
	Drain					DRAIN
WASH-2	Fill				HOUSE HOT	
	Chem-2 Inject	0 µS *				
	Chem-2 Wash	60	140	32		
	Neut-2 Inject	15				
	Neut-2 Circulation	30				
	Drain					DRAIN
RINSE 1	Fill				HOUSE HOT	
	Washing	60	140	32		
	Drain					DRAIN
RINSE 2	Fill				HOUSE HOT	
	Washing	180	189	182		
	Drain					DRAIN
RINSE 3	Fill				HOUSE HOT	
	Lube Inject	0				
	Washing	0	140	32		
	Drain					DRAIN
RINSE 4	Fill				MFW TANK	
	Washing	3-shots	32	32		
	Drain					DRAIN
DRYING	Drying	500	250	180		
JET-WASH	Washing	5				
	Pausing	5				
> cycle end <						

*** NOTE: chemical injection to be adjusted by user according to specific cycle requirements and detergent used**

CYCLE 8: GLASSWARE 8

STEP DESCRIPTION	STEP STAGE	STEP TIME (sec)	TEMPERATURE (°F) HEATING SP	TEMPERATURE (°F) GUARANTEE SP	WATER SUPPLY	DRAIN/HOLD PRESET
PREWASH	Fill				HOUSE HOT	
	Enzyme Inject	0				
	Washing	60	32	32		
	Drain					DRAIN
WASH-1	Fill				HOUSE HOT	
	Chem-1 Inject (DET)	0 µS *				
	Chem-1 Wash	60	140	32		
	Neut-1 Inject	0				
	Neut-1 Circulation	0				
	Drain					DRAIN
WASH-2	Fill				HOUSE HOT	
	Chem-2 Inject	0 µS *				
	Chem-2 Wash	60	140	32		
	Neut-2 Inject	15				
	Neut-2 Circulation	30				
	Drain					DRAIN
RINSE 1	Fill				HOUSE HOT	
	Washing	60	140	32		
	Drain					DRAIN
RINSE 2	Fill				HOUSE HOT	
	Washing	180	189	182		
	Drain					DRAIN
RINSE 3	Fill				HOUSE HOT	
	Lube Inject	0				
	Washing	0	140	32		
	Drain					DRAIN
RINSE 4	Fill				MFW TANK	
	Washing	3-shots	32	32		
	Drain					DRAIN
DRYING	Drying	500	250	180		
JET-WASH	Washing	5				
	Pausing	5				
> cycle end <						

*** NOTE: chemical injection to be adjusted by user according to specific cycle requirements and detergent used**

CYCLE 9: RINSE ONLY

STEP DESCRIPTION	STEP STAGE	STEP TIME (sec)	TEMPERATURE (°F) HEATING SP	TEMPERATURE (°F) GUARANTEE SP	WATER SUPPLY	DRAIN/HOLD PRESET
PREWASH	Fill				HOUSE HOT	
	Enzyme Inject	0				
	Washing	0	32	32		
	Drain					DRAIN
WASH-1	Fill				HOUSE HOT	
	Chem-1 Inject (DET)	0				
	Chem-1 Wash	0	140	32		
	Neut-1 Inject	0				
	Neut-1 Circulation	0				
	Drain					DRAIN
WASH-2	Fill				HOUSE HOT	
	Chem-2 Inject	0				
	Chem-2 Wash	0	140	32		
	Neut-2 Inject	0				
	Neut-2 Circulation	0				
	Drain					DRAIN
RINSE 1	Fill				HOUSE HOT	
	Washing	0	140	32		
	Drain					DRAIN
RINSE 2	Fill				HOUSE HOT	
	Washing	180	189	182		
	Drain					DRAIN
RINSE 3	Fill				HOUSE HOT	
	Lube Inject	0				
	Washing	60	140	32		
	Drain					DRAIN
RINSE 4	Fill				MFW TANK	
	Washing	3-shots	32	32		
	Drain					DRAIN
DRYING	Drying	500	250	180		
JET-WASH	Washing	5				
	Pausing	5				
> cycle end <						

*** NOTE: chemical injection to be adjusted by user according to specific cycle requirements and detergent used**

CYCLE 10: SERVICE CYCLE

STEP DESCRIPTION	STEP STAGE	STEP TIME (sec)	TEMPERATURE (°F)		WATER SUPPLY	DRAIN/HOLD PRESET
			HEATING SP	GUARANTEE SP		
PREWASH	Fill				HOUSE HOT	
	Enzyme Inject					
	Washing	30	32	32		
	Drain					DRAIN
WASH-1	Fill				HOUSE HOT	
	Chem-1 Inject (DET)	0 µS *				
	Chem-1 Wash	30	140	32		
	Neut-1 Inject	0				
	Neut-1 Circulation	0				
	Drain					DRAIN
WASH-2	Fill				HOUSE HOT	
	Chem-2 Inject	0 µS *				
	Chem-2 Wash	30	140	32		
	Neut-2 Inject	5				
	Neut-2 Circulation	30				
	Drain					DRAIN
RINSE 1	Fill				HOUSE HOT	
	Washing	30	140	32		
	Drain					DRAIN
RINSE 2	Fill				HOUSE HOT	
	Washing	30	189	32		
	Drain					DRAIN
RINSE 3	Fill				HOUSE HOT	
	Lube Inject	0				
	Washing	0	140	32		
	Drain					DRAIN
RINSE 4	Fill				MFW TANK	
	Washing	3-shots	32	32		
	Drain					DRAIN
DRYING	Drying	60	250	32		
JET-WASH	Washing	5				
	Pausing	5				
> cycle end <						

*** NOTE: chemical injection to be adjusted by user according to specific cycle requirements and detergent used**

COMMON TIME SETTINGS (sec)

FILL SEQUENCE	Fill Delay	0

DRAIN SEQUENCE	Drain Delay	0
	Power Drain	10
	Gravity Drain	10
	Flush Drain	4

REPEAT DRY	Repeat Dry	60

EXHAUST	Extra Exhaust	n/a
	Emergency Exhaust	n/a

TEMPERATURE GUARANTEE HOLD TIME (sec):	
PREWASH	600
WASH-1	600
WASH-2	600
RINSE-1	600
RINSE-2	600
RINSE-3	600
RINSE-4	600
DRYING	600

CYCLE :

STEP DESCRIPTION	STEP STAGE	STEP TIME (sec)	TEMPERATURE (°F) HEATING SP	TEMPERATURE (°F) GUARANTEE SP	WATER SUPPLY	DRAIN/HOLD PRESET
PREWASH	Fill					
	Enzyme Inject					
	Washing					
	Drain					
WASH-1	Fill					
	Chem-1 Inject (DET)					
	Chem-1 Wash					
	Neut-1 Inject					
	Neut-1 Circulation					
	Drain					
WASH-2	Fill					
	Chem-2 Inject					
	Chem-2 Wash					
	Neut-2 Inject					
	Neut-2 Circulation					
	Drain					
RINSE 1	Fill					
	Washing					
	Drain					
RINSE 2	Fill					
	Washing					
	Drain					
RINSE 3	Fill					
	Lube Inject					
	Washing					
	Drain					
RINSE 4	Fill				MFW TANK	
	Washing					
	Drain					
DRYING	Drying					
JET-WASH	Washing					
	Pausing					
> cycle end <						

COMMON TIME SETTINGS (sec)

FILL SEQUENCE	Fill Delay	

DRAIN SEQUENCE	Drain Delay	
	Power Drain	
	Gravity Drain	
	Flush Drain	

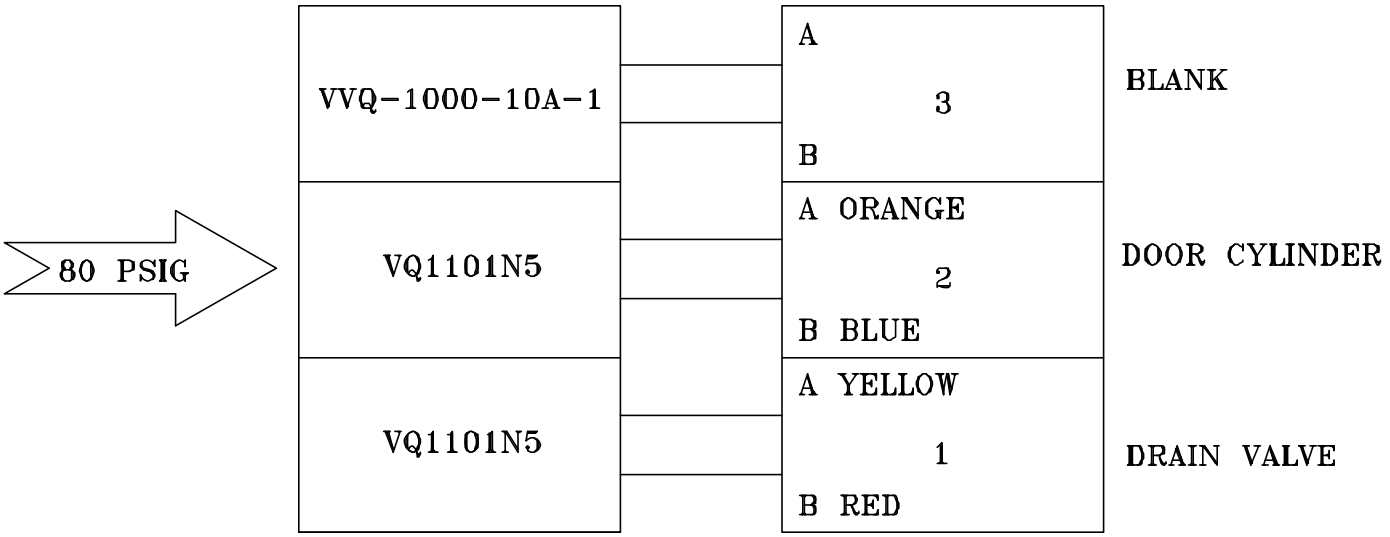
REPEAT DRY	Repeat Dry	

EXHAUST	Extra Exhaust	n/a
	Emergency Exhaust	n/a

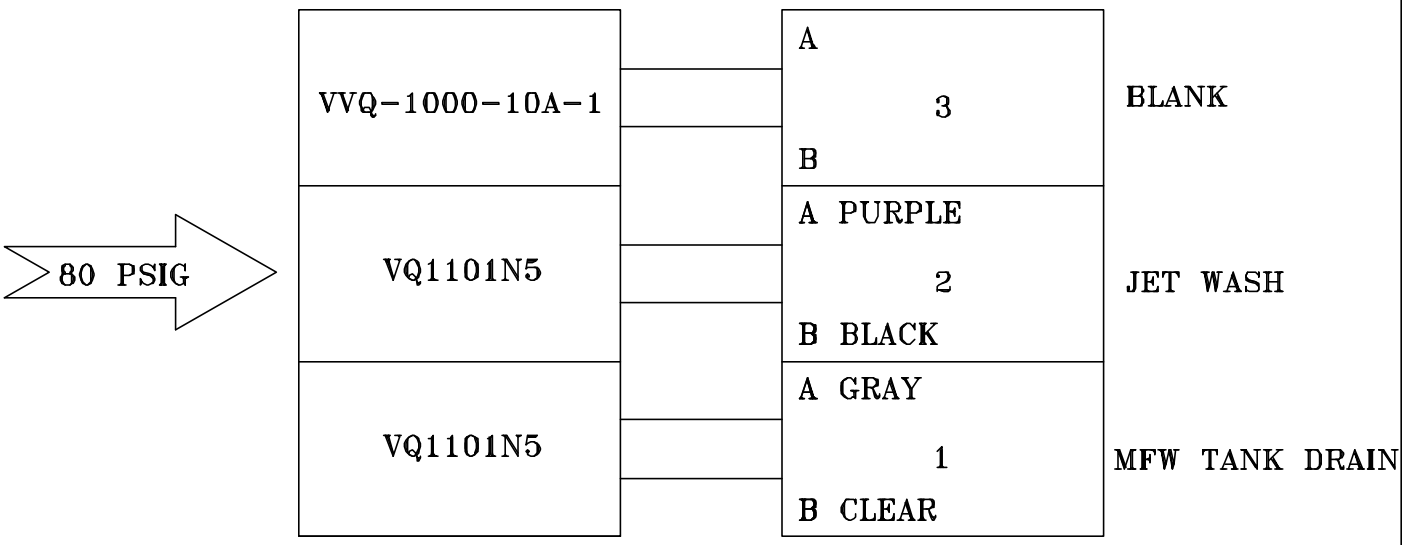
TEMPERATURE GUARANTEE HOLD TIME (sec):
PREWASH
WASH-1
WASH-2
RINSE-1
RINSE-2
RINSE-3
RINSE-4
DRYING

Appendix E: SMC VALVE CONFIGURATION

Appendix E: SMC VALVE CONFIGURATION

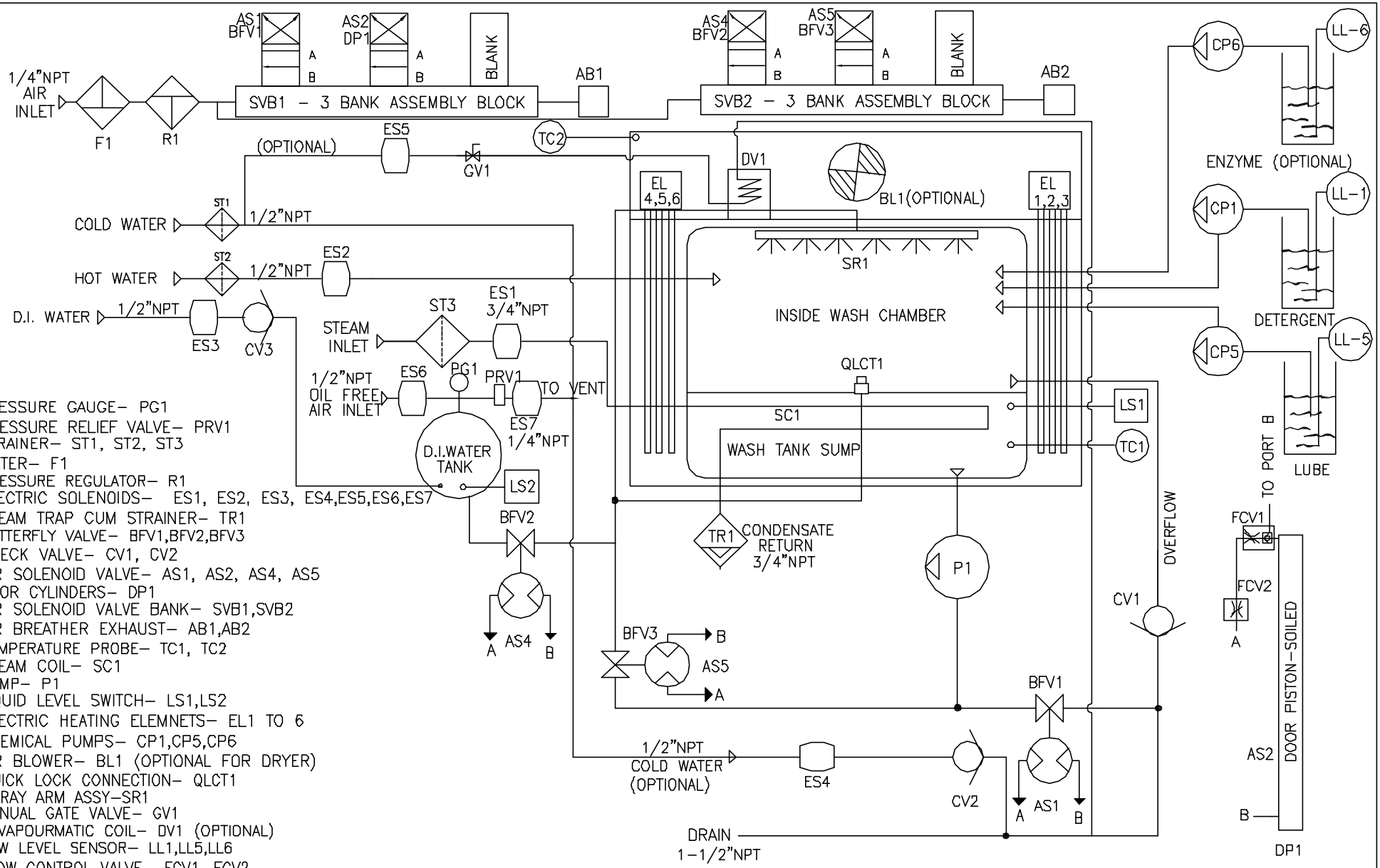


DC10



DC9

Appendix F: PIPING AND INSTRUMENTATION DIAGRAM



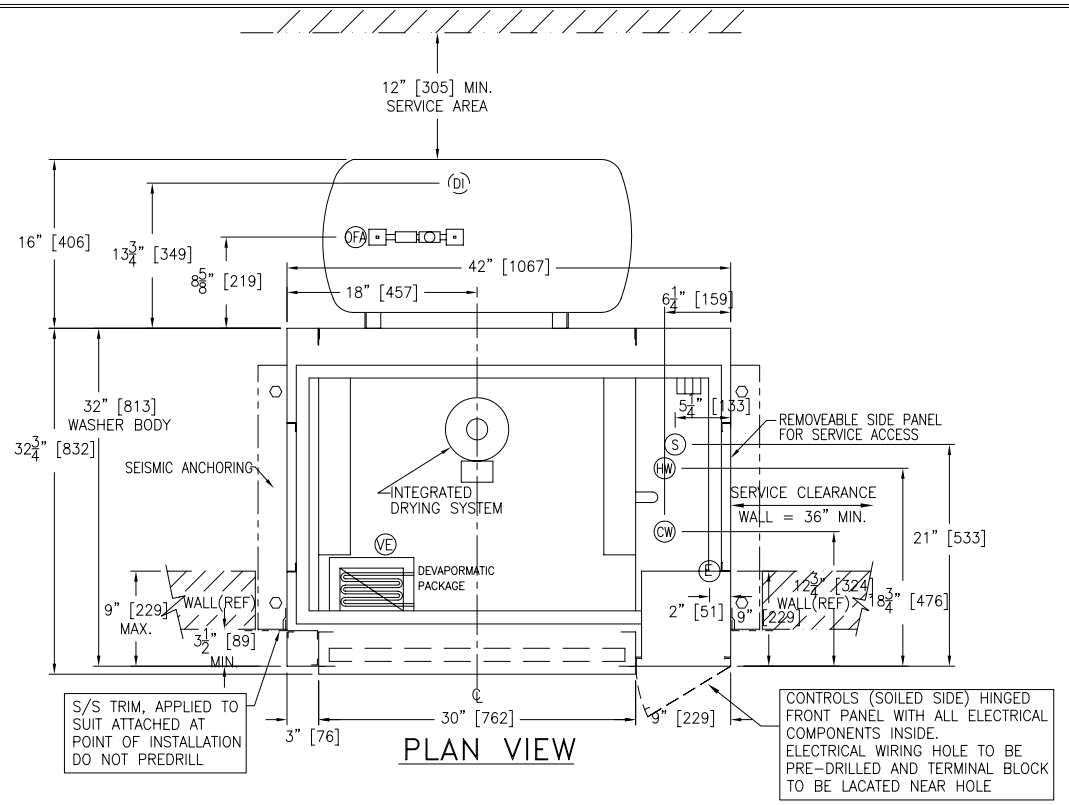
PRESSURE GAUGE– PG1
PRESSURE RELIEF VALVE– PRV1
STRAINER– ST1, ST2, ST3
FILTER– F1
PRESSURE REGULATOR– R1
ELECTRIC SOLENOIDS– ES1, ES2, ES3, ES4,ES5,ES6,ES7
STEAM TRAP CUM STRAINER– TR1
BUTTERFLY VALVE– BFV1,BFV2,BFV3
CHECK VALVE– CV1, CV2
AIR SOLENOID VALVE– AS1, AS2, AS4, AS5
DOOR CYLINDERS– DP1
AIR SOLENOID VALVE BANK– SVB1,SVB2
AIR BREATHER EXHAUST– AB1,AB2
TEMPERATURE PROBE– TC1, TC2
STEAM COIL– SC1
PUMP– P1
LIQUID LEVEL SWITCH– LS1,LS2
ELECTRIC HEATING ELEMNETS– EL1 TO 6
CHEMICAL PUMPS– CP1,CP5,CP6
AIR BLOWER– BL1 (OPTIONAL FOR DRYER)
QUICK LOCK CONNECTION– QLCT1
SPRAY ARM ASSY–SR1
MANUAL GATE VALVE– GV1
DEVAPOURMATIC COIL– DV1 (OPTIONAL)
LOW LEVEL SENSOR– LL1,LL5,LL6
FLOW CONTROL VALVE– FCV1, FCV2

MECHANICAL CONTROLS & PLUMBING SCHEMATICS. (SW4600GWDS– STEAM)

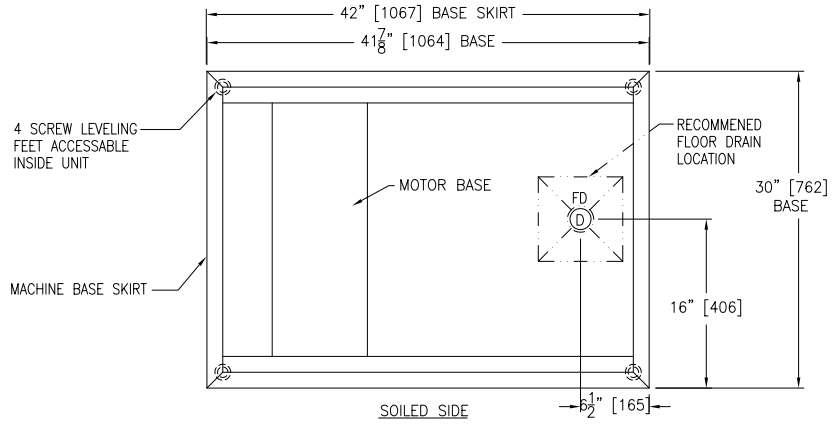
Scientek™
Technology Corporation
11151 BRIDGEPORT ROAD, RICHMOND,
BRITISH COLUMBIA, CANADA, V6X 1T3.
TEL: (604) 273-9094 FAX: (604) 273-1262

REVISIONS:		APPROVED: SKN	PROJECT #: 1428-1429
A		DATE: SEP 13, 05	
B		DRAWN: SKN	ITEM #:
C		DATE: SEP 13, 05	
D		SCALE: NONE	DRAWING #: P&ID #1428-1429
E		SHEET: 1 OF: 1	

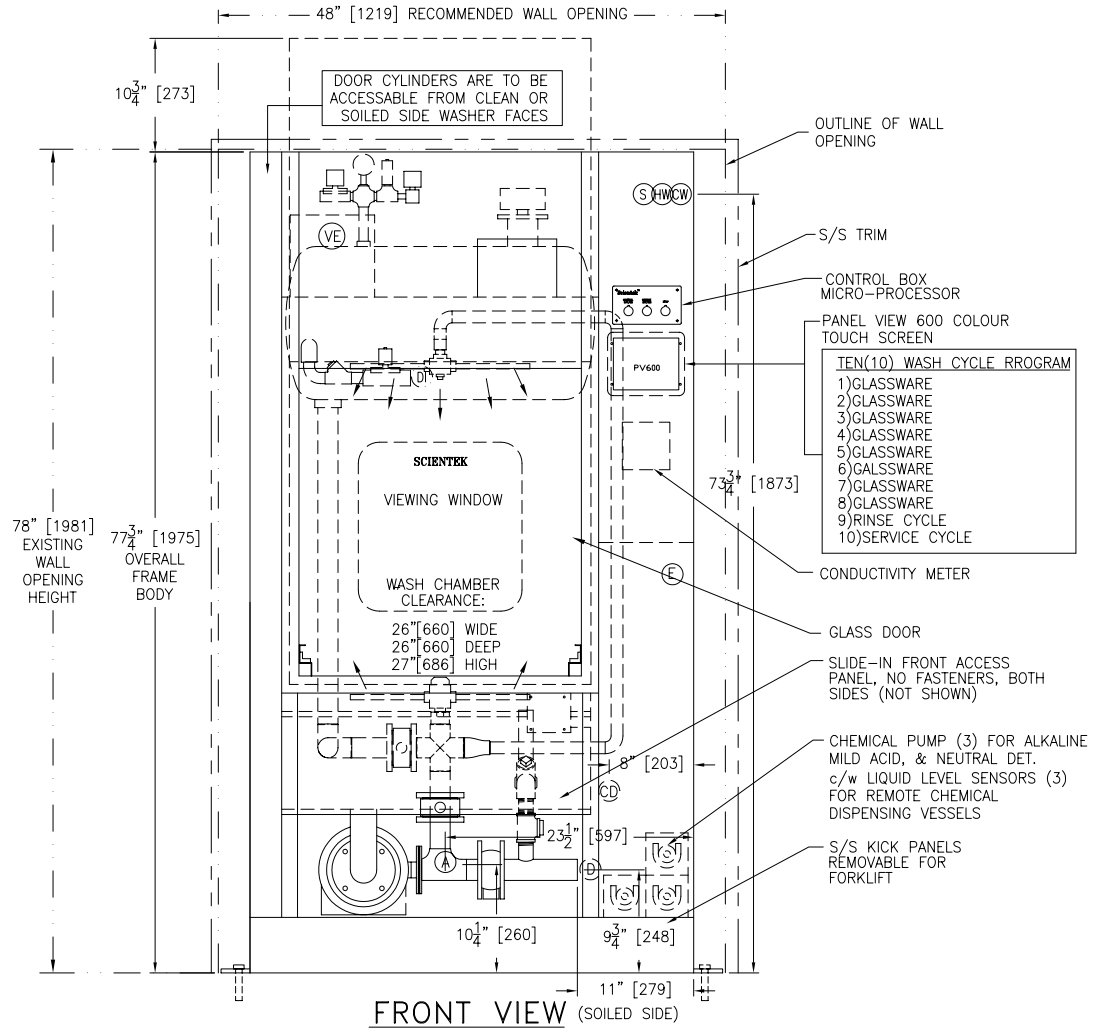
Appendix G: SHOP DRAWINGS



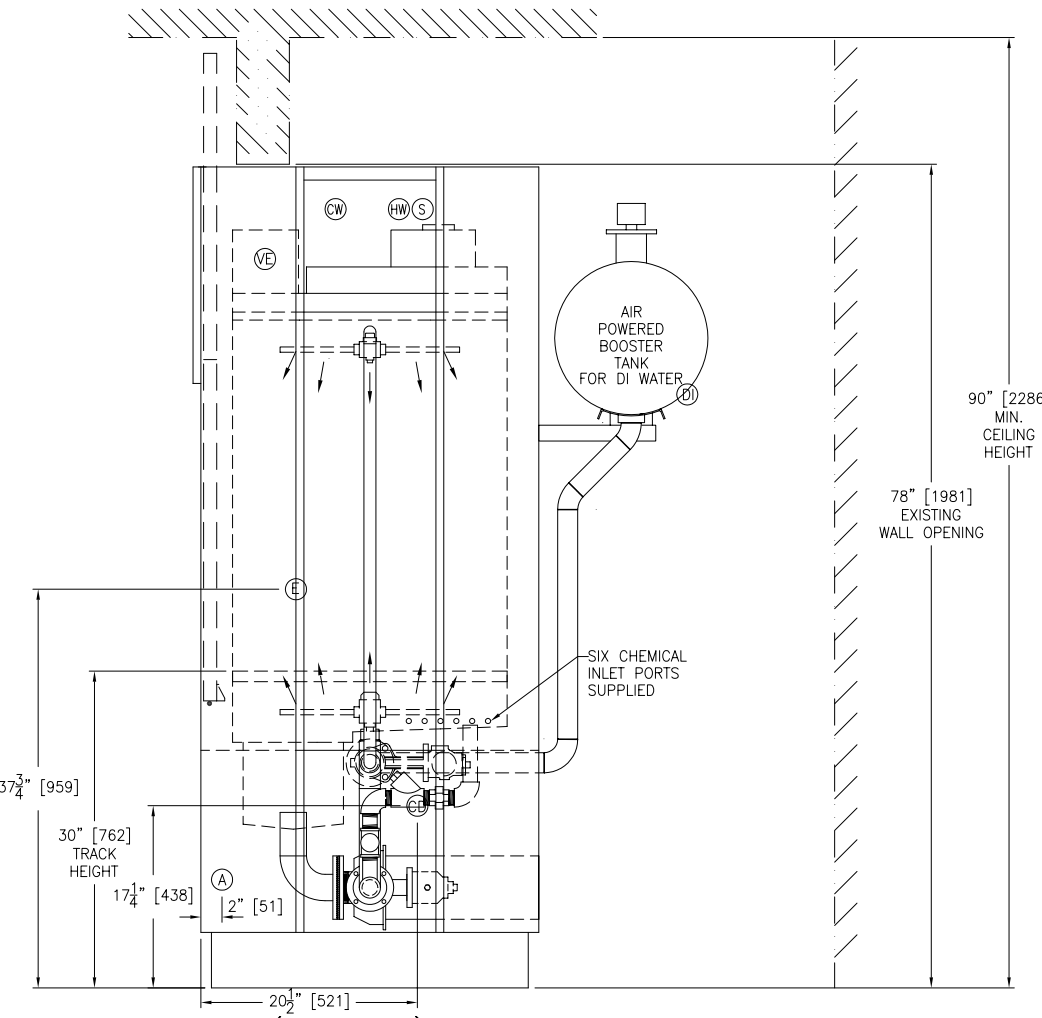
PLAN VIEW



BASE PLAN VIEW



FRONT VIEW (SOILED SIDE)



RIGHT (SERVICE) SIDE VIEW

SERVICE REQUIREMENTS

NO.	SERVICE	CONNECTION	NOTE
E	ELECTRICAL△ CIRCUIT	DISCONNECT SERVICE	
HW	HOT WATER	1/2" NPT	
D	DRAIN	1 1/2" NPT (PIPE TO EXISTING FLOOR DRAIN WITH AIR CAP)	
FD	BUILDING FLOOR DRAIN	2"MIN. RECOMMENDED LOCATION (AS SHOWN) WITHIN CLOSE PROXIMITY OF DRAIN	
A	AIR	1/4"NPT	
VE	VENT	DIRECT CONNECTION NOT RECOMMENDED (IN-DIRECT VENT HOOD RECOMMENDED)	
S	STEAM	3/4"NPT	
CD	CONDENSATE	3/4"NPT SINGLE CONNECTION (RETURN TO BOILER RECOMMENDED)	
CW	COLD WATER	1/2"NPT	
DI	DI WATER	1/2" NPT	
OFA	OIL-FREE AIR	1/2"NPT	

NOTE: ALL HOOKUPS TO BE LABELED BEFORE LEAVING PLANT

ENGINEERING DATA

SHIPPING WEIGHT: 1350 lbs
OPERATING WEIGHT: 1300 lbs
CRATED SIZE: 57"W x 40"L x 82"H
UNCRATED SIZE: 42"W x 33.5"L x 78"H

MACHINE FEATURES

FREE-STANDING
STAINLESS STEEL, TYPE 304 FINISH
INSULATED CHAMBER (TOP & SIDES) & DOORS
EXTERIOR VIEW-THRU LIGHT
POWER OPERATED SINGLE GUILLOTINE DOOR
STAINLESS STEEL PUMP
STEAM SUMP HEATER
AUTO DETERGENT (c/w PUMP)
AUTO INSTRUMENT LUBE (c/w PUMP)
PNEUMATIC S/S VALVES
PNEUMATIC DOOR RAMS
MICRO-PROCESSOR MICROLOGIX 1500
PANELVIEW 600 CONTROL INTERFACE
MULTIPLE WASH CYCLE SELECTION (10 CYCLES)
INTEGRAL TRANSFORMER FOR 120V CONTROL CIRCUIT
TEMP INDICATOR & RINSE GUARANTEE

GENERAL NOTES

△ ELECTRICAL SUPPLY MUST BE PROVIDED WITHIN SEALTITE FLEX, AND BE FED VIA A FUSED DISCONNECT PANEL PRIOR TO CONNECTION TO MACHINE JUNCTION BOX. (BY OTHERS.)

ALL PLUMBING LINES TO BE PROVIDED WITH SHUT-OFF VALVES AND UNIONS PRIOR TO CONNECTION WITH MACHINE. (BY OTHERS.)

RANGE INDICATES MINIMUM/MAXIMUM PRESSURES. IF SUPPLY EXCEEDS MAXIMUM, PROVIDE A REGULATOR PRIOR TO CONNECTION WITH MACHINE. (BY OTHERS.)

⬠ WATER, AIR, STEAM, AND CONDENSATE LINES TO BE CONNECTED TO MACHINE VIA UNIONS. (BY OTHERS.)

ALL SERVICES TO MACHINE (BY OTHERS) MUST COMPLY WITH APPLICABLE LOCAL CODES AND PRACTISES REGARDING FINAL CONNECTIONS. RESPONSIBILITY HEREIN LIES WITH INSTALLATION COMPANY, AND NOT EQUIPMENT MANUFACTURER.

SPECIAL FEATURE:
- IDS-46 INTEGRATED DRYING SYSTEM
- DEVAP-46 DEVAPOURMATIC PACKAGE
- AIR POWERED BOOSTER FOR DI WATER FINAL RINSE
- JET WASH
- SST1-46 S/S TRIM ONE SIDE
- 1 ADDITIONAL CHEMICAL PUMP FOR NEUTRAL DETERGENT
- CONDUCTIVITY METER W/ READOUT TO TOUCH PAD/SIGNAL FOR ADDED RINSE IF REQUIRED
- SA-46 SEISMIC ANCHORING
- LLIN-46 LOW LEVEL INDICATOR (QTY.: 3)
- DCD-46 DRAIN COOL DOWN

GLASSWARE WASHER/DRYER

(SINGLE DOOR, RIGHT HAND CONTROL)
(#1428 – QTY. 1, #1429 – QTY. 1)

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Scientek™ TECHNOLOGY CORPORATION
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BRITISH COLUMBIA, CANADA, V6X 1T3.
TEL: (604) 273-9094 FAX: (604) 273-1262

CUSTOMER: JOHN CUDIA & ASSOCIATES

PROJECT: STANFORD UNIV.

REVISIONS:		APPROVED:	PROJECT #:
A	JUNE 23, 2005	DATE:	1428/1429
B		DRAWN: MG	ITEM #:
C		DATE: JUNE 14, 2005	SW4600GWDS
D		SCALE: –	DRAWING #:
E		SHEET: 1 OF: 1	S3-4600-013

SERVICE REQUIREMENTS & DATA								
NO.	SERVICE	CONNECTION	DYNAMIC PRESSURE RANGE		FLOW RATE		CONSUMPTION	
			IMPERIAL	METRIC	IMPERIAL	METRIC	IMPERIAL	METRIC
E	ELECTRICAL CIRCUIT	DISCONNECT 30 AMP SERVICE	460–480 V / 3ø / 60HZ / 13 kW / 21.7 AMP. MAX DRAW/ 30 AMP MAX. PROTECTION					
HW	HOT WATER	1/2" NPT 120°F / 60°C MINIMUM	30–60 PSIG	207–414 kPa	12 GPM	46 L/min	44 GAL/CYCLE	166 L/CYCLE
D	DRAIN	1 1/2" NPT (PIPE TO EXISTING FLOOR DRAIN WITH AIR CAP)	———		2 GAL/sec	9 L/sec	———	
FD	BUILDING FLOOR DRAIN	2"MIN. RECOMMENDED LOCATION (AS SHOWN) WITHIN CLOSE PROXIMITY OF DRAIN.	———		———		———	
A	AIR	1/4"NPT	80 PSIG	552 kPa	———		1 FT3/CYCLE	0.03 M3/CYCLE
VE	VENT	DIRECT CONNECTION NOT RECOMMENDED (IN–DIRECT VENT HOOD RECOMMENDED)	NOTE: COLLECTION HOOD(S) ABOVE DOORS AND SERVICES AREA ON TOP OF MACHINE ARE RECOMMENDED. TOTAL EXHAUST RATE OF THESE AREAS TO BE 300–500CFM [142–236L/s]					
CW	COLD WATER	1/2"NPT (60°F/16°C MAX) SINGLE CONNECTION (DEVAPMATIC, DRAIN COOL DOWN)	30–60 PSIG	207–414 kPa	12 GPM	46 L/min	48 GAL/CYCLE	182 L/CYCLE
S	STEAM	3/4" NPT SINGLE POINT CONNECTION	40–60 PSIG	276–414 kPa	393 LBS/HR	179KGS/HR	45 LBS/CYCLE	20 KGS/CYCLE
CD	CONDENSATE	3/4" NPT SINGLE POINT CONNECTION	———		1 GPM	3.8 L/min	———	
DI	D.I. WATER	1/2" NPT CONNECTOR	30–60 PSIG	207–414 kPa	12 GPM	46 L/min	10 GAL/CYCLE	38 L/CYCLE
OFA	OIL–FREE AIR	1/2"NPT TO AIR POWERED BOOSTER	30–40 PSIG	207– 276kPa	3.5CFM	0.1 m^3/min	2 FT^3/CYCLE	0.06 m^3/CYCLE

NOTE: ALL HOOKUPS TO BE LABELED BEFORE LEAVING PLANT

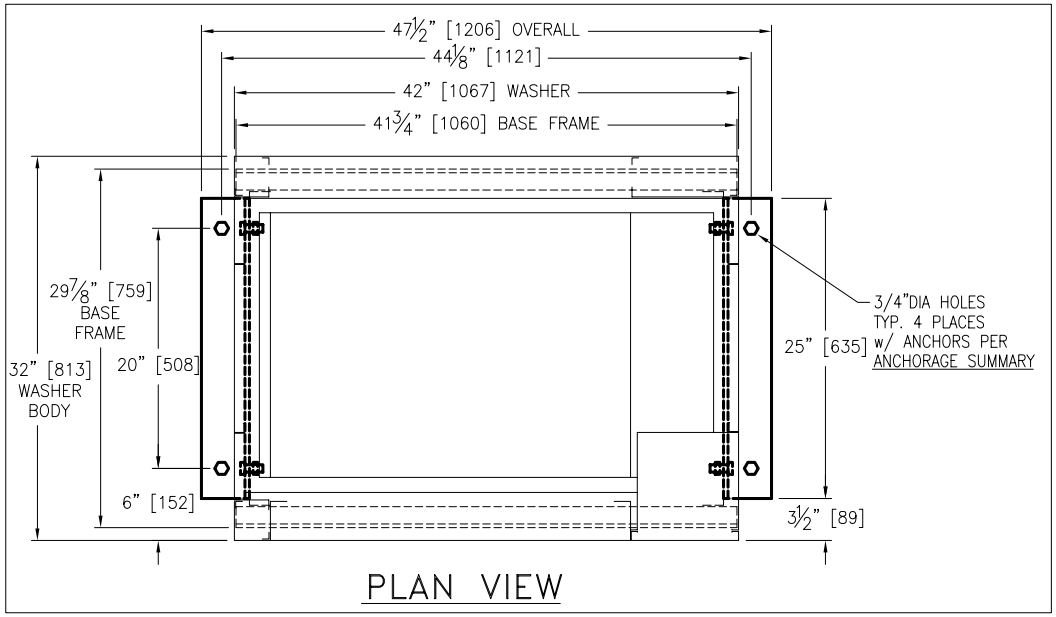
ENGINEERING DATA

SHIPPING WEIGHT: 1350 lbs
OPERATING WEIGHT: 1300 lbs
HEAT LOSS: 8,000 BTU/hr

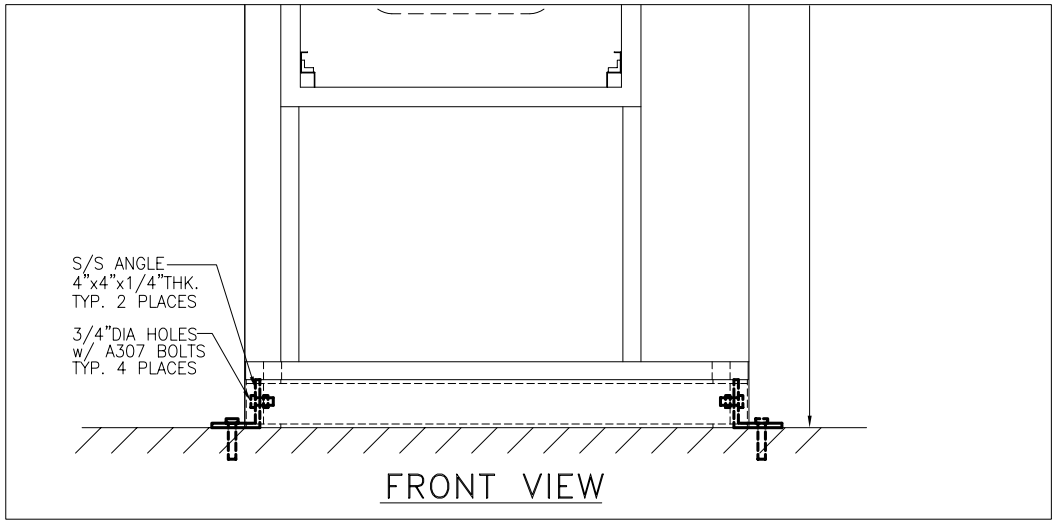
4600–STEAM UTILITY REQUIREMENTS & DATA

Scientek™
HOSPITAL AND LABORATORY EQUIPMENT
11151 BRIDGEPORT ROAD, RICHMOND,
BRITISH COLUMBIA, CANADA, V6X 1T3.
TEL: (604) 273–9094 FAX: (604) 273–1262

REVISIONS:		APPROVED: SKN	PROJECT #: 1428/1429
A	JUN 23, 2005	DATE: JUN 14, 2005	
B		DRAWN: MG	ITEM #: SW4600–Steam(480V)
C		DATE: JUN 14, 2005	
D		SCALE:	DRAWING #: S1–4600–013
E		SHEET: 3 OF: 3	



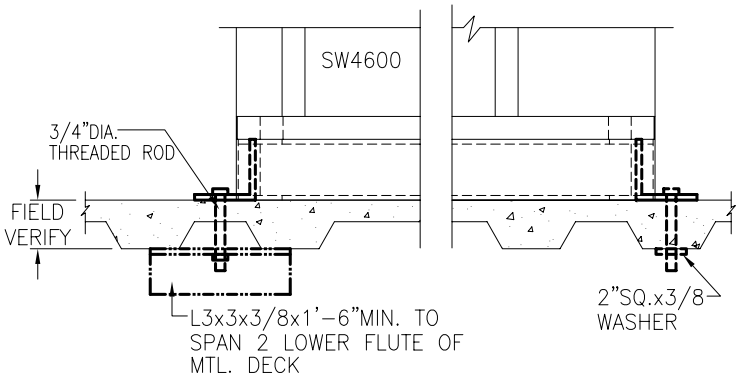
PLAN VIEW



FRONT VIEW

ANCHORAGE SUMMARY FOR SW4600 WASHER

h_x / h_r	ANCHORAGE (SUPPLIED & INSTALLED BY OTHERS)
	4 OF 3/4" DIA. HILTI KB-3 BOLTS w/ 3-1/4" EMBED IN H.R. CONC. (ρ_c=3000 psi)
0~0.4	4 OF 1/2" DIA. HILTI KB-3 EMBED IN Lt. Wt. Conc. FILL OVER MTL. DECK (ρ_c=3000psi) USE WASHR TO MAKE UP DIFFERENCE BETWEEN BOLT AND HOLE SIZE
OVER 0.4	4 OF 3/4" DIA. A36 THREADED ROD THRU THE SLAB OR CONCRETE FILL OVER METAL DECK TO 3/8 x2" SQUARE PLATE OR ANGLE 3x3x3/8 BRIDGING BETWEEN BOTTOM FLUTES



WHERE:
h_x =HEIGHT ABOVE GROUND LEVEL THAT UNIT IS INSTALL IN THE BUILDING
h_r =HEIGHT OF ROOF ABOVE THE GROUND LEVEL

Scientek™
HOSPITAL AND LABORATORY EQUIPMENT
11151 BRIDGEPORT ROAD, RICHMOND,
BRITISH COLUMBIA, CANADA, V6X 1T3.
TEL: (604) 273-9094 FAX: (604) 273-1262

	REVISIONS:	APPROVED:	PROJECT #: 1428 / 1429
A	MAY 18,2005	DATE:	
B		DRAWN: MG	ITEM #: SA-46
C		DATE: MAR 14, 2005	
D		SCALE: 1:16	DRAWING #: 4010029
E		SHEET: 1 OF: 1	

Appendix H: WARRANTY

Scientek™
Hospital and Laboratory Equipment

11151 Bridgeport Road, Richmond, BC Canada V6X 1T3
Phone: (604) 273-9094 Fax: (604) 273-1262 E-Mail: service@scientek.net

ONE YEAR PARTS AND LABOUR

WHAT IS COVERED

This warranty covers defects in material and workmanship under normal use providing that:

- the equipment has not been accidentally or intentionally damaged, altered or misused.
- the equipment is properly installed, adjusted, operated and maintained in accordance with the installation instructions provided with the product.
- the rating plate affixed to the appliance has not been defaced, obliterated or removed.

HOW LONG IS THE COVERAGE PERIOD

The equipment warranty coverage remains in effect for one (1) year from the date the equipment is put into operation, or 18 months from date of shipment, whichever comes first.

WHO IS COVERED

This warranty is extended to the original purchaser or its agent only.

EXCLUSIONS – WHAT IS NOT COVERED

- Normal maintenance items such as light bulbs, fuses, gaskets, O-rings, interior and exterior finishes, lubrication, deliming, broken glass, etc.
- Failure caused by erratic voltages, incorrect pressure or temperature of water or steam supply.
- We assume no responsibility for travel costs beyond 150 km round trip, or two (2) hours, travel other than overland, overtime and holiday charges, and any special arrangements for service requiring other than normal time.
- Improper or unauthorized repair.
- Damage in shipment.
- Changes in adjustments and calibration after thirty (30) days from equipment installation date.
- This warranty will not apply to any parts subject to damage beyond the control of the Company, or to equipment which has been subject to alteration, misuse or improper installation.
- The obligations of the Company are limited to those set forth in this warranty which is given in lieu of all warranties, conditions and liabilities whatsoever, implied by statute, common-law, or otherwise, and the Company, its servants and agents shall not be liable for any claims for personal injuries or consequential damages or loss, however caused.

WARRANTY CLAIM PROCEDURE

CUSTOMER RESPONSIBILITY

- To advise the Company that warranty service is required, stating the Model and Serial Number and nature of the problem.
- To ensure the problem appears to be a factory responsibility. Improper installation or misuse of equipment are not covered under this warranty.
- To co-operate with the Company so that warranty service may be completed during normal working hours.

SERVICE AGENCY RESPONSIBILITY

- To perform the warranty service during normal business hours, usually within 48 hour of notification of warranty service request.
- To ensure the problem is a factory responsibility, if not, to advise the customer before performing the service that charges will be the responsibility of the customer.

DEALER RESPONSIBILITY

- To co-ordinate customer service request with the Company Service or Sales Representative providing:
  1. The model and serial number and details of defect.
  2. Date of installation and original TSM/Scientek invoice number.

TSM/SCIENTEK RESPONSIBILITY

- To provide the finest line of equipment available free of all defects.
- To factory test every unit before shipment to ensure it performs to required standards.
- To maintain competent factory-trained Service Agencies.
- To stock operational service parts and normally make shipment within 24 hours from receipt of order from Service Agency, Dealer or Customer.
- To pay normal shipping or mailing charges on service parts.